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A. E. S.

TRANSACTIONS

OF THE

CHICAGO GYNÆCOLOGICAL SOCIETY

FROM

SEPTEMBER 25, 1896, TO OCTOBER 15, 1897

WITH COMPLETE INDEX.

[v. 5.]

PUBLISHED BY
THE AMERICAN GYNÆCOLOGICAL AND OBSTETRICAL JOURNAL.

NEW YORK.
1897.

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TRANSACTIONS

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PRELIMINARY REPORT OF A CASE OF CÆSAREAN SECTION, SUCCESSFUL FOR MOTHER AND CHILD.*

By Joseph B. De Lee, M. D., .

Lecturer on Operative Obstetrics, Northwestern University Medical School; Obstetrician to Mercy Hospital and to the Chicago Lying-in Hospital Dispensary.

Mrs. F. was referred to me by Dr. P. T. Burns. She was born in Indiana, and was called a "weakly child" in her first years. Learned to walk in her fourth year, and for a long time had "weak ankles," so that she had to wear braces. There has always been something the matter with the right side of her body, and she has noticed that the right hip and shoulder have been lower than the left. There is an indefinite history of some injury to the pelvis when patient was a child. This needs futher investigation. Menstruation began at seventeen years, was regular and normal; she married at twenty, and is now over twenty-one years of age. The period of September 18, 1895, was normal in all respects. That of October was five days late, was small in amount, and the flow lasted only two days. The patient had believed herself pregnant in October, and this was the last "show."

Quickening was not noted, but the patient says it was about

* Read by invitation. For *Discussion*, see page 14.

February 22, 1896. Reckoning according to the usual rule, confinement was to be expected August 1st, and it is probable that the patient became pregnant very shortly before the menstruation of October 23d.

Labor began August 1, 1896, at 2 P. M., the pains being few, the intervals long. At midnight they became stronger, and ten minutes apart. Dr. Burns, the family's physician, was sent for. The head was freely movable above the inlet, and the doctor diagnosed a highly contracted pelvis. During the night the pains continued strong; in the morning the patient got some rest. At 2 P. M. the conditions were the same as they were during the night, and at five, the pains growing stronger, but no advance in the labor being perceptible, Dr. Burns invited me to see the case. Examination: Small (five feet and three quarter inches), delicately built woman. The narrowness of the hips was especially striking. Slight scoliosis in the lumbar region, convexity to the right.

Pelvic measurements: Crests, 23; spines, 21.3; bitrochanteric, 26; circumference, 79; Baudelocque, 18; conjugata diagonalis, 10; C. V., estimated 8 centimetres.

Sacrum felt from the inside is straight, but lower third projects sharply into the pelvis almost at right angles to the body of the bone. Pelvis is small, sides within easy reach of the finger; linea innominata can be felt all the way round, and there seems to be some asymmetry of the inlet; the right side is flatter than the left. The symphysis pubis is high, is displaced to the right side, and presents somewhat of a beak, which can be grasped by the fingers on either side, and is similar to that observed in osteomalacic pelves. The horizontal ramus of the pubis on the right side runs straight backward; that on the left describes the usual curve. The vulva is displaced fully an inch to the left of the median line, and looks forward and upward more than normal.

The crest of the ilium of the right side is straight; on the left the normal curve is retained.

The fœtus lay occipito dextra posterior; heart tones above and to right of the navel 140 per minute, loud and strong. The head was distinctly visible and palpable as a tumor above the pubis, and, when pressed down upon the inlet, the head projected fully half an inch anterior to the symphysis. It was thus easy to put one branch of the pelvimeter on the head directly, and get the intra-uterine length of the fœtus. This was twenty-six centimetres and a half,

and, according to Ahlfeld, the real length of the fœtus was estimated at fifty-three centimetres. The oblique diameter of the fœtal head was also very easy to take, measuring eleven centimetres and a half. These results were obtained so easily and so uniformly when repeated that I felt justified in using them for the diagnosis.

The cervix was effaced, the os admitting two fingers, head ballotting on the finger. Bag of waters intact.

Diagnosis.—A pelvis contracted in all its diameters. The inlet asymmetrically deformed, and of an obliquely oval, possibly somewhat triangular shape. Signs of rickets. I first thought the pelvis came under the class of generally irregularly contracted rachitic pelves, but, since the operation, the idea of a Naegelé pelvis—as the French say, "*oblique ovulaire*"—has come up. I hope to settle this by another examination.

The true conjugate was eight centimetres, but the available conjugate, owing to the irregular contraction, had to be estimated at something less than this. The child was at term (full) and larger than normal in size. It was evident that the spacial disproportion was so great that a living child could not be brought through the inlet by ordinary means. Had there been any room at the sides of the pelvis, prophylactic version and extraction might have succeeded in delivering a living child. This operation does not give good results in generally contracted pelves. There were three courses of treatment open to us:

1. Expectancy, a trial of forceps and craniotomy on the living child as a last resort.
2. Symphysiotomy.
3. Cæsarean section from the relative indication.

The pelvic deformity, the size of the child's head, decided the first. Expectancy meant craniotomy, and craniotomy should not be done on the living child if the conditions are favorable for Cæsarean section.

Symphysiotomy did not offer any better chances than Cæsarean section. A tight vagina and vulva, a necessary great spreading of the bones, especially as in this case the pelvis was obliquely contracted, the integrity of the sacro-iliac joints came seriously into question, the after-effects of such a severe disrupture of the whole osseous system, which I believe occur more often than are published, must make one cautious in selecting this as a primary operation.

It was therefore decided to propose Cæsarean section; in the event of her refusal, expectancy, forceps, craniotomy.

The points were put before the patient and her husband unvarnished, and the operation guaranteeing the life of the child accepted.

The patient was removed to Wesley Hospital, and arrived there at 11.30 P. M. Everything that was to come in contact with the patient was boiled one and a half hour, even though it had been sterilized before, and there were only two pairs of hands in the work—my assistant's, Dr. F. X. Walls, and my own.

Dr. I. A. Abt was to undertake the resuscitation of the child; Dr. Zimmerman, interne, gave the anæsthetic (chloroform).

Dr. Burns, Dr. Van Hook, Dr. Byrne, and Dr. Van Velsor were present.

The classical Cæsarean section was done, it being neither indicated nor desired to do a Porro operation. The vagina was thoroughly douched with one-per-cent. lysol solution, the abdomen prepared as usual for laparotomy, and an incision made in the linea alba involving the two middle quarters of a line drawn from the fundus uteri to the pubis.

The uterus was drawn out of the abdomen by the left horn, a large sponge (gauze) placed beneath it, and Dr. Walls compressed the lower uterine segment with both hands.

The uterine incision was begun in the middle of the anterior surface of the fundus, and bled so profusely as to lead to the suspicion that the placenta was situated there, so an elastic ligature was placed around the cervix. The incision in the uterus, which, however, did not touch the placenta, was enlarged with scissors to four inches, and the child quickly extracted on one foot. It was apnœic, not asphyxiated, and came around easily.

The uterus contracted tardily. The placenta, which was partly separated, was peeled off, and membranes removed complete by gentle traction. The hæmorrhage was quite profuse, coming from the placental site as well as the wound, so the uterus was freely mopped with hot sponges, and gently slapped with a hot wet towel.

Sutures were now placed—deep muscular sutures of No. 8 silk—down to the decidua, of which twelve were put in, and over this a Lembert suture of fine silk, continuous, and interrupted every inch.

Hæmorrhage now ceased completely; the peritoneal toilette was made, there being very little fluid in Douglas' *cul-de-sac* and the utero-vesical pouch.

The abdominal wound was closed in two layers—one, using silk, involving peritonæum fat and the fascia; the upper, of silkworm gut, taking in the skin, the subcutaneous fat, and in part the fascia. The first was in part continuous, the latter interrupted. Iodoform and sterilized gauze dressing. The patient was now catheterized and put to bed in good condition, pulse 108.

The subsequent course of the case was uneventful. Eighteen hours after the operation temperature reached 100° F., but after this the highest was 99.8. The pulse was 108 after the operation, but decreased gradually, till on the twelfth day it was 46 per minute. The diet was as usual after laparotomy. It was difficult to get the bowels moving, but flatus passed freely; so there was no uneasiness in this direction. The stitches were removed on the eleventh day, primary union throughout. There was considerable odor to the lochia in the second week, for which a little iodoform emulsion was injected into the vagina. This had no effect, and, since the patient had no other symptom, the condition was treated no further.

The baby—a girl—at birth weighed seven pounds and a half, and presented the following measurements: Length, 53.5 centimetres; biparietal diameter, 10.2; bitemporal, 9; suboccipito-bregmatic, 9.8; occipito-frontal, 12; oblique, 11; occipito-mental, 13.4; bisacromial, 11; bisiliac, 9.5. Circumferences of head: occipito-frontal, 35; suboccipito-bregmatic, 33.25 centimetres. The head was hard, the sutures and fontanelles almost closed—a head that would have conformed with difficulty even to a normal pelvis.

These measurements agree remarkably with those taken while the child was *in utero*. The length of the fœtus had been estimated at 53 centimetres, and the diameter of the head at 11.5 centimetres. There existed a difference of only half a centimetre in each.

The child was put to the breast immediately, and, with the exception of a little fever and diarrhœa the first few days, grew visibly, gaining almost a pound a week.

The mother and child left the hospital on the twenty-fourth day, both in excellent condition.

3318 INDIANA AVENUE.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, September 25, 1896.

The *President*, E. C. DUDLEY, M. D., in the Chair.

Ectopic Pregnancy.

Dr. CARL WAGNER (by invitation): About nine o'clock this morning I was called in haste to see a patient who was suffering very great pain. On arriving at the house, I learned that the patient had been taken with severe pain at 8.30, immediately after intercourse; she also vomited. I at first thought the trouble to be appendicitis, but, on examination, could find nothing abnormal in the region of the appendix. History of four months pregnancy which she gave suggested the possibility of extra-uterine pregnancy. The pulse became rapid in thirty-five minutes, and a diagnosis of rupture of extra-uterine pregnancy was made. Dr. Reynolds was called in consultation, and coincided with my diagnosis. The patient was removed at once to St. Joseph's Hospital, which was near her home. The preparations at the hospital were made very quickly and the patient operated upon. Before the anæsthetic was given about a quart of salt solution was injected subcutaneously. The entire operation took about twenty minutes, but before the last stitch was tied the patient went into collapse and died.

Dr. G. W. REYNOLDS: Dr. Wagner has given a very clear history of the case, and I do not know that there is anything I can add to it except to congratulate him upon his quick and accurate diagnosis. He saw the case in the morning about nine, and I saw her in consultation at ten. It required but one glance at the patient to confirm his diagnosis. She was at that time almost exsanguinated, almost pulseless, and it was a question whether to give her the benefit of an operation or allow her to die without. We concluded to give the patient the benefit of the doubt, and, as she was

in close proximity to St. Joseph's Hospital, I advised that she be taken there immediately, and in the meantime preparations were made for a laparotomy. Before taking her from the house everything possible was done to prevent the immediate effects of hæmorrhage—the legs were bandaged, the lower extremities elevated, and a hypodermic injection of strychnine was given. As soon as she arrived at the hospital a physiological solution of salt was administered subcutaneously. Very little anæsthetic was required. A median incision was made, the tube was tightly grasped and tied, and the fœtus removed. The operation did not take over twenty minutes from the time the patient reached the operating room, but unfortunately she died.

This case brings before the Society the question whether to operate in such cases. Very likely there are gentlemen present who have had experience in operating upon cases that were almost exsanguinated, as this patient was. There was a possible chance of saving her life, and whether it was advisable to take that step or to let her die without the possible benefit of an immediate operation was thoroughly discussed and deliberated upon before operating. I hope the question will be thoroughly discussed, and I should like to hear from the gentlemen who have had a greater experience with ectopic gestations and ruptured tubes.

Dr. J. H. ETHERIDGE: I do not see what else the gentlemen could have done under the circumstances, so I think there is nothing to discuss on that point. I would like to ask the doctor how he bandaged the extremities, and what amount of blood he found in the abdominal cavity. In such cases, where there is evidence of a terrific hæmorrhage going on, why would it not be possible to produce compression of the abdominal aorta low down? I am in the habit of teaching students in cases of post-partum hæmorrhage to slip the hand up the abdomen and press the aorta against the back bone, and that will sometimes stop the hæmorrhage. These are the tragical cases of gynæcology. I think if Dr. Reynolds had it to do again he would make an immediate operation right in the house, no matter how miserable the surroundings, and get at the broad ligament. I see nothing to criticise but everything to commend in the management of this case.

Dr. J. T. BINKLEY, JR.: Is there not some one present who can decide the question of transfusion in cases like the one reported? Is it not a questionable procedure under such circumstances? I have

no criticism to make of the treatment pursued in this case, but it seems to me that by filling the heart it is stimulated, and causes renewed hæmorrhage where there might be a cessation of the hæmorrhage from low blood pressure or clots. In cases that are nearly exsanguinated it takes but the slightest amount of anæsthesia, and it takes but a moment to go into the abdomen and catch the bleeding point with forceps.

Dr. E. C. DUDLEY: I have in mind two cases, both seen in consultation with Dr. Bacon, of Englewood, in which a diagnosis of extra-uterine pregnancy with ruptured tube was made, and in which the patient was so weak from loss of blood that no operation was done. All preparations were made for operation in each case in hope that a little rally would enable us to operate. But the rally came so gradually that before we really considered the question of operating in either case the patient was considerably better, and, to make a long story short, both patients recovered without operation. Experience of this sort illustrates the fact that the hopeless condition is often rather apparent than real. I have no disposition to call in question the general rule of operating as soon as possible in extra-uterine pregnancy. These two cases are not cited as a criticism of the course pursued by the essayist. They are only intended to show that recovery without operation may occur when the condition is so grave as to put operative measures out of the question.

In former times hæmorrhage from an extra-uterine pregnancy was called pelvic hæmatocele. The old records are full of terrible cases with recovery without operation. No one thought of operating then, at least not until the formation of pus changed the diagnosis to pelvic abscess. I well remember a case of this kind which occurred about a year ago in St. Luke's Hospital. There was overwhelming hæmorrhage from rupture of the pregnant tube. The collapse was as marked as it would be in Asiatic cholera. It is not conceivable that the patient could have sustained an operation at this time, and yet she slowly recovered. I afterward opened the abdomen and removed a suppurating tube, together with some clots of old grumous blood. The tube upon removal showed evidence of a former rupture, due to extra-uterine pregnancy. It is a vexed question in surgery to know when to operate in these cases and when to wait. If the patient is bordering on collapse, one may wait with considerable hope that recovery may take place without opera-

tion. If so many extreme cases once recovered when the disease was called pelvic hæmatocele, why should they die now when the name has been changed to extra-uterine pregnancy with ruptured sac?

Dr. J. H. ETHERIDGE: I was never more impressed with the value of human blood in saving life than in a case where I had a ligature slip off. It was an ovariotomy. I reopened as soon as possible and got out two pints of blood. It seems an incredibly small amount to kill a woman, but she died. I have seen half a dozen cases in which patients have died from hæmorrhage. There is a certain point beyond which the loss of blood does not permit a person to recover. What that line is or where it is I do not know; whether it is the disproportion of the blood between the tissues and that in the vascular system, I can not say. When patients die from hæmorrhage, I suppose they die because of anæmia of the cardiac center in the medulla; there is not enough blood there to keep the blood center going. I am at a loss how to express myself so as to lead any one to know when the patient has crossed the line from which she never comes back in a case of hæmorrhage. I know that patients die from hæmorrhage after they have had intracellular injections of saline fluids; I know that after we use all sorts of stimulants—cardiac stimulants, nerve stimulants, strychnine, digitalis, and things of that kind—they die without losing any more blood.

Dr. M. L. HARRIS: The point Dr. Etheridge mentions I think has been realized a good many times by all surgeons. The doctor has probably seen cases, as I have, in which there would appear to be no doubt as to the benefit of saline injections. We know experimentally that we can reduce the quantity of blood in an animal to the point the doctor speaks of and it dies. We know, too, after they reach this point, if we supply a fluid to the vessels and heart, these animals recover. Patients may reach the exsanguinated stage, and, if we supply a certain amount of fluid, they get well. Of course, this is difficult to demonstrate in any particular case. I think one point which is probably not sufficiently appreciated is the injection of a sufficient quantity of fluid. The amount of blood lost to the fluid injected is too great. I have been recently in the habit of injecting larger quantities, and I feel certain that in a case recently operated upon the patient's life was saved by the large amount of fluid that was injected. Transfusion was made of a salt

solution three or four times, and, while I feel sure this patient had crossed the line Dr. Etheridge spoke of, still she recovered. Another point in connection with these cases is the removal of the blood from the peritoneal cavity. Dr. Reynolds did not say whether he removed it or not, and the patient died so quickly it would not play any part in this case; but I think the blood, either the clots or liquid, should not be removed from the peritoneal cavity. It is equivalent to so much transfusion, and, if no infection takes place, the patient recovers more quickly, and the blood is reutilized by the system by being left in the peritoneal cavity. That is a point which has been demonstrated experimentally. I have seen a patient with ruptured tubal pregnancy operated where the peritoneal cavity was filled with blood and the patient almost moribund—pulseless. The tube was quickly grasped and ligated, requiring scarcely five minutes to do, all the blood left in the abdomen, and the patient recovered. So I think the blood should not be removed from the peritoneal cavity in these cases. I had a case about a year and a half ago of secondary hæmorrhage following operation in the abdomen, in which this procedure was adopted. This patient was likewise almost pulseless at the time; the abdomen was quickly reopened, the bleeding points secured, and the blood left. The patient recovered.

As to the time for transfusion, I think it is useless to transfuse as long as the bleeding point is still unsecured; we are simply putting more fluid into circulation to aid the heart to pump out what little blood is left. The first thing should be to secure the bleeding point, and then transfuse. The cases Dr. Dudley spoke of that recovered without operation should be considered exceptions, and not the rule. That a patient is more likely to recover by being left alone with a bleeding point than to recover after the bleeding point is secured does not seem rational. We have to take into consideration here the shock attending operation, and the anæsthetic, and we know that amounts to considerable. When a patient in such a condition will stand the additional shock and when not is a point to be determined entirely by judgment. Like Dr. Etheridge, I am unable to express the condition of the patient when we should operate and when not, but I do not think there is any doubt of the general principle that these patients should all be operated.

Dr. ETHERIDGE: I would like to ask how long it was from the

time the doctor first saw the case, at 8.30, until the operation was completed?

Dr. WAGNER: About three hours.

Dr. ETHERIDGE: The reason I asked was this: Dr. Dudley speaks of its being several hours in his cases from the time of rupture until operation was abandoned. I think there is a difference between these two cases. Dr. Wagner reports this as one of those very severe hæmorrhages in which there was no possibility, it seems to me, of saving the patient. Of course there are hæmorrhages and hæmorrhages; we all know that whenever the artery that is giving rise to the hæmorrhage begins to contract the safest thing to do is to let the patient alone and not to transfuse, and, as Dr. Harris says, encourage the heart to pump out what blood is left; so I think there is a difference between Dr. Dudley's cases and these cases.

Dr. G. W. REYNOLDS: I advised Dr. Wagner to operate in this case because I made a vaginal examination and there was no swelling (no tumor) present. If the rupture had taken place between the folds of the broad ligament extraperitoneally, there would have been a swelling in the pelvis. I knew from the condition of the patient that there was an extreme hæmorrhage. In reply to the question of Dr. Etheridge as to the method of bandaging, the legs were simply elevated and bandaged. While there was a possibility of this patient rallying, I am satisfied that she would have bled to death in a very short time if no operation was performed. She was in close proximity to the hospital, where everything was aseptic, and it required only about ten minutes to take her there and place her on the operating table. It would have been very well to open the abdomen in the house if we were prepared for it, but it would take us one hour to prepare the patient and get the instruments in readiness for the operation. For that reason I advised that she be taken to St. Joseph's Hospital immediately, and, in order to fortify her for the immediate effects of the operation, I advised a hypodermic injection of strychnine, and no other stimulants were administered until the tube was grasped and tied. Then I advised the rectal injection of whisky (two ounces with six ounces of warm water), and all the heart stimulants in the category of medicine for use in such cases were administered. I knew that the patient would certainly die within a few hours or so if something was not done, and, if we had allowed the patient to die without giving her the

benefit of an operation, I should have always censured myself. The patient was given a physiological saline solution (she must have received a quart) in the subclavicular region. I did not advise opening a vein in order to give the transfusion because I thought it was unnecessary; I was satisfied we had done all that was possible.

We did not remove the blood which filled the abdominal cavity, but simply tied off the tube and removed the fœtus; we merely wiped away such clots of blood as forced themselves out; there was no effort upon our part to clean out the abdominal cavity; we did not want to lose any time. Of course, as Dr. Harris says, there will be absorption; it is the same as filling the abdominal cavity with warm water, which prevents shock. By removing the blood I believe you chill the intestines, and that is where surgical shock occurs. We should expose the intestines as little as possible; it was my object not to chill them, because the patient was then suffering from shock, not surgical shock, but from the ruptured tube and the hæmorrhage.

Dr. J. A. Lyons: I have not the least doubt but that almost any one of us would have acted as these gentlemen did under the same circumstances. As we look at the case now, I am inclined to think perhaps most of us would have gone still further and operated without taking the patient to the hospital and without transfusion, previous to opening the abdomen, but at the close of the operation. The doctor says he would not have dared to do this without being perfectly aseptic. That is right, as a rule, but there are times when we have to stop the hæmorrhage as soon as possible, and I have heard Dr. Etheride say in this Society, " Cut down, get your bleeding point, tie it off, do it in a minute or two, and the danger may be averted." The worst case of this kind I ever saw was operated upon in a room black with soot. We dared not wait, so we put her on the table in the kitchen, which was the only place warm enough to operate in, and the patient made a good recovery. We boiled our instruments, made our hands clean, put on clean sheets, and operated as quickly as possible. I think in less than a half hour from the time we got there the operation was finished. I should say in this case the hospital was a little too close; had it been farther away, they probably would not have taken the patient there. Still, I think under the circumstances most of us would have done the same thing.

Dr. Etheridge: I may be mistaken, but there is one thing I

would criticise in the doctor's procedure, and that is bandaging the legs; it would have been better if he had kept the blood out of the trunk, because as long as the blood can go through an artery it will not stop. Bandaging the legs from the feet upward would force it up, and the volume would be increased. I think there is only one opinion to be expressed—that is, the highest commendation for the operation. If he had done anything else it would have been almost criminal.

Dr. CARL WAGNER (in closing): I will only say that we left the blood in the abdomen from the same point of view as Dr. Harris has suggested. In regard to operating in spite of the patient being almost pulseless, I operated three years ago on a case of extra-uterine pregnancy that had been pulseless for about half an hour, and I operated in a kitchen, but the patient got along nicely and is well to-day. I found at that time, however, that operating in the house is sometimes accompanied by too many annoying complications, as the surgeon who assisted me fainted, the nurse also fainted, and we had almost as much work with the doctor and the nurse as with the patient.

Ectopic Pregnancy.

Dr. KARL F. M. SANDBERG: The patient from whom this specimen was removed was twenty-eight years old, well nourished; had been married seven years; she had one child six years ago, and had not been pregnant since. She menstruated on the 19th of June, missed her period in July, and on the last day of July was taken with a sudden pain in the left inguinal region, with a feeling of weakness in the limbs, and went to bed. She did not call a physician at the time. She stayed in bed two or three days, got up again, and was up two or three days; then had to go to bed again, and stayed there ten or twelve days. She then got up feeling pretty well. While in bed the second time she flowed a few days, and, after stopping for a while, it commenced again, the flow being light-colored blood, which gradually grew darker; it continued for three weeks. Two physicians were called in, a diagnosis of extra-uterine pregnancy was made, and operation advised.

On examination, a tumor was found in the upper part of the left broad ligament about the size and shape of a goose egg, somewhat movable, not very tender; uterus somewhat large; the diagnosis was confirmed. There was still some doubt whether it was

a tubal pregnancy without rupture or whether rupture had taken place at the time the symptoms indicated. The result of the examination tended to the belief that no rupture had taken place. Apparently the location of the pregnancy was in the tube; the broad ligament was seemingly free. The abdomen was opened, and immediately arterial blood escaped from the cavity. On introducing the fingers the omentum was felt adherent to the inlet of the pelvis anteriorly. This, as well as some adherent loops of the small intestine, was loosened and an oval mass found. This was easily shelled out, and proved to be a firm blood coagulum. The broad ligament was then isolated and ligated close to the uterus and at the infundibulo pelvic ligament. The fruit sac was found in the same, having pushed the anterior blade forward and upward. The soft and shreddy top part of the sac was removed. After removal of the tube and ovary a spurting artery required an additional ligature. Gauze packing and drainage. It appears from the specimen that rupture into the folds of the broad ligament has taken place with bleeding on two different occasions: one is shown by the central dark part, and another later one is shown by the light-colored peripheral layer of the coagulum. The tube is small, and shows the inner one third dilated and forming part of the wall of the fruit sac. I wish to call attention to the difficulty of ascertaining whether there was a hæmatoma of the broad ligament or an unruptured tubal pregnancy, and to the fact that apparently rupture took place while the patient was being chloroformed, which shows that these extra-uterine pregnancies rupturing into the broad ligament are possibly not so safe to leave alone as it has been claimed.

A Case of Cæsarean Section, Successful for Mother and Child.

By Joseph B. De Lee, M. D.

(See page 1.)

Discussion.

Dr. C. S. Bacon: There is nothing but favorable criticism to be made of the report of the case except the lack of data for a more accurate determination of the character of the pelvis. There is considerable difference of opinion as to the value of measurements, but their aid should not be entirely overlooked in a case of obliquely

contracted pelvis. Among the measurements recommended by Naegele those of the distances between the posterior spines and the anterior spines of the opposite side, as well as the distances between the ischial tuberosities and the opposite posterior iliac spines, are the most important. The description that was given seems to point toward a Naegele pelvis. If it is a Naegele pelvis, it is interesting on account of the ætiology. A rhachitic condition has no influence in the production of a Naegele pelvis, and the question of inflammation of the sacro-iliac joint as a possible result of the fall comes into consideration. If it was a Naegele pelvis, with ankylosis of the sacro-iliac joint, then the question of symphyseotomy is entirely ruled out. Mobility of both sacro-iliac joints is a necessary condition of this operation. Consequently the choice of operation was such as every one must agree to. There being no infection, there is no question as to which operation should be done—the Porro or the conservative section. There are perhaps two points that might be discussed relative to the operation. One is removing the uterus from the abdominal cavity before emptying it. The contents of the uterus were not infected at all, and hence the removal of the uterus from the abdominal cavity was not indicated. When we have reason to fear that the contents of the uterus are infected then it should always be removed, so as to prevent, if possible, any of the contents getting into the abdominal cavity; but here it would seem possible to have opened the uterus and removed the child without taking the uterus out, and it would have made a somewhat easier operation. It is a question whether hæmorrhage, which may be somewhat profuse, can be as easily controlled with the uterus in the abdominal cavity, and I suspect that nearly every one who had not operated several times might be tempted to first remove the uterus before opening it, because of the better facility for controlling the hæmorrhage.

The next question is that of the elastic ligature. Saenger first, and later many others, have shown that the application of an elastic ligature certainly tends to an increased amount of hæmorrhage, and, where one has efficient assistants to control the uterus, the elastic ligature is not necessary and is liable to lead to trouble afterward.

The sewing up of the uterus, as well as the closure of the abdomen, was done well, as is proved by the result. The greater security promised by the method of sewing the uterus in four stages or

rows of sutures, as proposed by Professor Senn, might well have been considered in this case, where a rapid ending of the operation was not called for.

I have only one word more to say, and that is in regard to the management of the lochia. It is curious how the lochia should have become offensive, because the vagina was first well cleansed and the entire placenta and membranes were removed. But so long as it did become offensive, and there were no other symptoms, I think there is no question that Dr. De Lee did right in not doing anything further. His practice conforms to the rule which is now commonly adopted, that interference with the interior of the uterus in a case of simply bad-smelling lochia, where there are no other symptoms, is not indicated.

Dr. ETHERIDGE: I wonder why the medical profession does not take into serious consideration the removal of the ovaries as a classical part of the procedure of Cæsarean section in a woman like this, preventing any other conception. Here is a woman who is malformed, and sociologists will tell us that we are just turning her loose on the world to beget other perverts physically, and I would like to know why the idea should not be advanced and encouraged of complete oöphorectomy in these cases, or removal of the tubes at any rate, thus preventing her from conceiving in the future. I think the next case of Cæsarean section I have I shall seriously discuss that question with the mother and father before operation.

Dr. J. A. LYONS: I have little to say except to commend Dr. De Lee for the excellence of his paper and for the manner in which he prepared for and carried out the operation. It was indeed done in a masterly manner. Dr. Etheridge's suggestion calls to mind a case I had some years ago. I was called by the family on the 4th of July, because of an accident to the young lady's brother, and while there I noticed that one of the daughters had a deformed pelvis, and advised the mother either to have ovariotomy performed or not allow her child to marry. They thought over the matter for some time, and were considerably worried, but did nothing. In the course of two years the girl married, and almost immediately became pregnant. The deformity was so bad, however, that the fœtus could not grow to any extent. The promontory of the sacrum came probably within an inch and a half of the pubes. The uterus in growing seemed to elongate entirely; the cervix at the time she miscarried, at about three and a half months, had lengthened out

to two or three inches, and it was with very great difficulty that the fœtus was removed at that time. However, we can not always figure on having such a difficult time in these cases. I was engaged some two months ago to confine a woman whom I thought was deformed about as badly as any one could be, and I was prepared for almost any procedure, especially as it was her first child. She had but one pain, and the child was delivered without trouble.

Dr. M. L. HARRIS: It seems to me the doctor has not presented sufficient reasons for selecting the more serious operation of Cæsarean section in preference to symphyseotomy in this case.

A conjugata vera of eight centimetres is supposed to come well within the limits of symphyseotomy, and the doctor states the question of it being a Naegele pelvis did not come up until measurements made some time after the birth. Of course, he could not consider the smallness of the vagina in a primipara as an indication for Cæsarean section.

The injurious effects of symphyseotomy on the sacro-iliac joints mentioned does not seem to be borne out by statistics. In a recent paper by Ayers on the after-effects of symphyseotomy in seventy-three American and Canadian cases, he has shown that no serious injury to the sacro-iliac joints or the symphysis occurs. From the evidence presented, I think a symphyseotomy would have been proper to consider in this case, as it should have the preference over a Cæsarean section when possible.

Dr. J. B. DE LEE (in closing): I am very much pleased at the tenor of the discussion, and will say in answer to Dr. Bacon about the shape of the pelvis that I have not as yet made a diagnosis as to the pathology of the pelvis, but I have a very clear conception as to the nature of the deformity. The pelvis is oval, almost triangular, and this can be caused by osteomalacia, by rickets, and by disease in the sacro-iliac joints, either congenital or acquired, the so-called Naegele pelvis. Which of these it is I do not know; both of them may be present. Kleinwächter showed a pelvis that was exquisitely rhachitic and also a Naegele pelvis. In regard to the operation itself, I confess the reason I rolled out the uterus was simply to make the operation easier. After I have had a little more experience in Cæsarean section I believe I will leave the uterus in the abdomen unless it is infected. However, I think in this case rolling the uterus out helped to stop the hæmorrhage, which was quite severe.

Regarding the use of the elastic ligature, I knew very well at the time the objections to it. I gave the uterus into the hands of my assistant to control, but he was new to the operation and did not successfully compress the lower uterine segment. The ligature was not in place more than a minute or two, as immediately after the child was delivered I unclamped the forceps and removed the ligature.

In answer to Dr. Etheridge's suggestion about ovariotomy in these cases, I certainly think it should be considered. This woman is deformed, and may produce deformed children, although this child presented all the signs of a well-developed healthy infant. Another point in performing ovariotomy and Cæsarean section: one does not like to increase the mortality of the operation, and anything that will take more time or involve the use of more ligatures will certainly raise the mortality somewhat.

In regard to performing symphyseotomy in preference to Cæsarean section, the last statistics to which I have had access show a mortality from symphyseotomy of ten to twelve per cent., while Cæsarean section performed in such favorable cases as mine gives a percentage of eight per cent. (Leopold), or even less.

I said a tight cervix and vagina are an objection to symphyseotomy and a point in favor of Cæsarean section. Edgar, of New York, says the danger of symphyseotomy lies as much in the soft parts as in the bony pelvis. The cervix, the vagina, and perinæum are likely to be torn by the rapid extraction, and, on the other hand, the child can be injured or will die during the extraction rendered difficult by the resistant soft parts.

Any one who has had to deliver a child rapidly through a tight vagina and unprepared perinæum knows how difficult an operation it is. I need only refer to a breech presentation in a young primipara.

A conjugata vera of eight centimetres is not an indication for Cæsarean section in a flat pelvis. Here one can usually deliver by version and extraction. But in a generally contracted pelvis a conjugata vera of eight centimetres and a half allows the Cæsarean operation. This is especially true when the pelvis is obliquely contracted, because the available conjugate is smaller still.

Regarding the integrity of the sacro-iliac joints, we have no way of determining their mobility. Results obtained by putting a finger in the rectum and then abducting the thighs, or having the patient

stand first on one foot, then the other, as the Germans do, are entirely illusory. In all obliquely contracted pelves we must suspect the integrity of these joints. I can show large numbers of obliquely contracted rhachitic pelves with osteitis around the joints which would seriously cripple their mobility.

Official Transactions. T. J. WATKINS, M.D.,
Editor of Society.

CLASSIFICATION OF INFLAMMATION OF THE UTERUS AND ITS RELATIONS TO CIRCUMUTERINE INFLAMMATION.*

BY E. C. DUDLEY, A.M., M.D., CHICAGO.

Inflammation broadly defined as the reaction which living tissue exhibits to morbid irritation may include a wide variety of lesions. Some of these lesions have been variously and vaguely designated as chronic metritis, sub-acute metritis, sub-inflammatory states, irritative states and congestive states. This broad definition, however, is not intended to include neoplasms, although the division between some neoplasms and inflammatory formations may at certain points be arbitrary.

The study of metritis is the study of the anatomy and physiology of the uterus as modified by inflammation. It is important therefore to keep in mind not only the anatomy and physiology of the organ, but also, if we are to consider the subject in its relations, we must also keep in mind the anatomy and physiology of the uterine appendages, pelvic cellular tissue and other circumuterine structures.

The most significant factor in metritis is the endometrium. It presents in the developmental and atrophic changes of puberty and the menopause, in the vascular changes of the menstrual ebb and flow, widely and constantly varying states. Inflammation of the uterus may occur during infancy before the endometrium has matured, during puberty when it is maturing, during maturity when it has reached its full physiological significance, during the menopause when it is undergoing permanent retrograde changes, or during senility when, in the physiological sense, it has forever disappeared. The occurrence of metritis under such diverse con-

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* Read as part of a symposium. For *Discussion*, see page 64.

ditions partly explains the wide and variable range of its phenomena, the difficulty of description, and accounts for some of the confusion of classification and nomenclature which runs through the literature.

CLASSIFICATION.

The classification of a subject is largely a matter of the point of view. There is probably no other subject in medicine upon which so many diverse and irrational points of view have been taken. Science has been defined as knowledge classified according to law. The literary classifications of inflammation of the uterus are often wanting both in knowledge and law. The following attempts may be considered :

I. *The ætiological classification* is based upon predisposing causes, such as parturition or traumatism, and upon the bacterial causes ; we therefore have gonorrhœal, erysipelatous, traumatic, puerperal, metritis, etc. The difficulty, however, in differentiation between many causes which may occur in any one case renders almost useless the etiological classification as a clinical guide. A bacteriological classification has been attempted, but our knowledge is not yet sufficient to make it adequate as a therapeutic guide. In the mean time we may distinguish between different bacterial causes and adjust the treatment accordingly. For example, a streptococcus infection might indicate the removal of the uterus, while a milder infection might call for curettage or for no treatment at all.

II. *The pathological classification*, so called, into catarrhal, suppurative, granular, hemorrhagic and ulcerative metritis is rather a designation of certain phases of the inflammatory process than a classification.

III. *The anatomical classification* includes endometritis, myometritis, perimetritis, corporeal, cervical, parenchymatous and glandular metritis. If these varieties usually occurred as distinct circumscribed lesions instead of complicating one another, if each could be known by its own peculiar symptom group, if ordinarily one could be clinically separated from the other, the anatomical classification would not be, as it is, impractical, impossible and misleading. Endometritis, for example, cannot long continue without involvement of the myometrium, and *vice versâ*. In either form there will be congestion and consequent increased secretion through the glands. The glandular structures therefore may be involved. Metritis includes the peritoneal covering of the uterus, and usually extends beyond the uterus. There are no sharp clinical lines of demarcation be-

tween the anatomical divisions of the uterine and peri-uterine inflammation.

A further study of the routes of infection will show that not only the different parts of the uterus but the uterus itself and its surrounding structures are in close anatomical, physiological and pathological relations with one another. These elaborate attempts at definite classification, therefore, even though diagrammatically attractive, are clinically impossible.

To illustrate the absurdity of the attempted classifications of the metritis, observe the following from an otherwise excellent modern treatise. This work classifies metritis into (1) acute inflammatory, (2) hemorrhagic, (3) catarrhal, (4) chronic painful. In the first division the word inflammatory is tautological. Any of these so-called varieties may be hemorrhagic, catarrhal or painful. It is possible, therefore, to retain of this classification but two words—acute and chronic.

The current nomenclature of the subject, although not the outgrowth of adequate classification, is yet indispensable as a means of naming certain forms and phases of metritis. Such words as gonorrhœal, glandular, hypertrophic, interstitial, parenchymatous and catarrhal are convenient for purposes of description. The word endometritis, for example, must be used to describe, not a distinct lesion independent of the rest of the uterus, but rather an essential part of uterine inflammation. In this way we shall not lose sight of the clinical relations between the various forms and phases of metritis.

Let us now raise another question relative to the looseness and confusion of the current classifications. The term simple inflammation as distinguished from septic, for example, has no definite clinical meaning. A mild inflammation is usually called simple, a virulent inflammation, septic. We know that an inflammation, seemingly very mild, may readily take on a decidedly infectious character. It is a question whether a simple reparative process should be called inflammatory at all. To designate an intense inflammatory process as complex instead of septic would be no more vague than to call a mild inflammation simple. Until such words as simple can be clearly defined and clinically utilized it is better to avoid them. We may think of the inflammatory process in several ways: 1. As having gone only into the congestive stage. This would be a mild form but not to be described as simple. 2. As having gone on to the stage of effusion or suppuration.

This, especially if it involved much systemic disturbance would often be called septic. When did it become septic? 3. As being the result of a mild or virulent infection. Is it simple in the one case and septic in the other? 4. As occurring in structures of greater or less resistance. What is there in such conditions to designate on the one hand as simple, on the other as septic? In the present state of our knowledge we must use for descriptive purposes an adaptable and therefore flexible nomenclature. We may, however, simplify the subject of classification by throwing out such vague indefinite words as simple.

The distinction between acute and chronic inflammation, since these conditions enter extensively into the pathology of the disease of women, is most important. Many deny altogether the existence of chronic inflammation, for example, of the endometrium. Some attribute the condition which is usually classed under that name to congestion; others call it a sub-inflammatory state. We shall avoid the question whether certain conditions should be called congestive, inflammatory or sub-inflammatory. The discussion of this question is long, tiresome and unprofitable, a contest largely of words. The following outline of some of the phenomena of inflammation will help to make clear the distinction between acute inflammation and what we shall call chronic inflammation.

The inflammatory reaction which living tissue exhibits to morbid irritation is, first, defensive and then constructive or reparative. The defensive process is an effort to circumscribe the disease by throwing around it a limited wall of inflammatory exudate; the morbid action thus confined and concentrated within narrow limits is within these limits more or less intense and destructive. It may result in the sacrifice of a part for the safety of the whole. The force of the disease is spent in the destructive process, and may be active only or chiefly within the limiting wall. Finally normal conditions of nutrition are established, the constructive or reparative process becomes active and the limiting wall is absorbed. If the constructive process continues until repair is complete and then ceases, the part will resume its normal functions; the inflammation will be at an end.

Acute Inflammation.—If the infection is of such virulence or of such character as to call forth the defensive processes just described and to produce blood stasis with more or less severe swelling, pain, heat and redness and finally to produce local destruc-

tion, the inflammation is acute. The disease may terminate with resolution or go on to suppuration.

Chronic Inflammation.—If the irritation is of minor intensity or in any other way of such character as to fall short of provoking much defensive action, there will be little or no limiting wall and consequently no intense destructive process concentrated within a circumscribed space ; heat, swelling, pain and redness if present will be more diffuse and less pronounced. Under these conditions there is a minimum of defence and an excess of construction, and the inflammation is chronic.

Chronic inflammation may follow acute inflammation or may have been chronic from the beginning. The excessive constructive action which belongs to it explains the hyperplastic and hypertrophic results of so-called chronic metritis. It also explains certain morbid nutritive changes in the blood vessels and lymph vessels of the pelvis and in the cellular tissue of the pelvis. Sclerotic disease in other organs offers a close analogy.

It is unprofitable to speculate on the question whether the conditions just described under the name chronic inflammation would be better classified as congestion or as sub-inflammatory states. They are recognizable under either of these names. They occur more frequently in neuropathic women, and especially in cases of various diatheses, anæmia, lithæmia, gout, struma, cholæmia. Diabetes is also a strong predisposing cause. They are usually less dangerous to life and often more destructive to health than the acute inflammations. They constitute a large proportion of the ailments of women and include some of the most distressing ailments. They are persistent and hard, often impossible, to cure. In such cases it is often difficult to draw the line between these congestions which fall short of inflammation and actual inflammation. One of the most common forms of uterine catarrh is that which occurs in women of deficient eliminative power ; that is, the bowels, the kidneys and other eliminative organs fail to throw off sufficiently the waste products ; then the mucous glands of other organs whose function is not excretory may vicariously undertake to make good the deficiency. An infinite amount of misdirected and injurious local treatment is constantly being applied to these cases.

The significance of pelvic inflammation varies according to the resistance of the patient, to the location and nature of the structures involved and to the virulence of the causes which produce

it. Strong predisposing causes make the woman less able to resist morbid irritation, and inflammation once established is more likely to be severe and progressive. If infection is confined to superficial areas its gravity is relatively much less than when deeper structures are diseased. Endometritis, for example, is less serious than an inflammation involving the uterine wall or the parametric lymphatics and veins. Moreover the same infection is more serious in some places than in others. This may be illustrated by the case of a man who picked his teeth with a vaccine point and experienced the most distressing result. Some bacteria are harmless and some only mildly virulent. The gonococcus, for example, is more general and therefore more disabling than the staphylococcus. The streptococcus pyogenes are more dangerous than either.

THE RELATIONS OF CIRCUMUTERINE INFLAMMATION TO METRITIS.

The significance of uterine inflammation is chiefly in its tendency to spread beyond the uterus and to involve the cellular tissue, the Fallopian tubes, the ovaries and the peritoneum. The swift and terrible march of traumatic puerperal and other infections to a destructive or even fatal result is largely explained by the close anatomical and physiological relations of the blood and lymph streams to the endometrium and peritoneum, especially those parts of the peritoneum which cover the uterus and Fallopian tubes.

Since the source of pelvic infection is usually endometritis, it follows that the routes by which it passes to the outlying structures must lead from the endometrium. Two such routes always lie open, one by continuity of surface, another by the lymph and blood vessels.

The route by continuity of surface is supported by the fact, first, that endosalpingitis is known to follow endometritis when there is no involvement of the lymphatics or veins in the parauterine connective tissue; second, that the same microbes are found in the inflamed mucosa of the uterus and tubes when there is no inflammation of the submucous connective tissue; third, that the tubal inflammation is sometimes limited to the uterine end of the tube and directly continuous with similar inflammation in the horn of the uterus.

Transmission by continuity of surface does not invariably involve all the epithelial surfaces over which the infection has passed. It is therefore possible, although not usual, for inflammation to

travel from the endometrium to the abdominal end of the tube without intervening infection of the uterine end. Moreover the uterine end may have been infected, but owing to its smoother surface and greater resistance may have recovered, leaving the disease only at the abdominal end.

The route by the lymph and blood vessels.—The lymph vessels run from the uterus outward into the cellular tissue between the folds of the broad ligaments and continue along the tubes and the ovarian ligaments to the inguinal, obturator and iliac lymph glands.* These vessels are in direct communication with the pelvic peritoneum, Fallopian tubes, ovaries and para-uterine cellular tissue. The lymphatic and veinous routes are evidenced, first, by the frequent presence of salpingitis in the abdominal end of the tube. If it had traveled from the uterus by continuity of surface the intervening mucosa would usually, though not necessarily, have been infected. Second, the para-uterine lymphatics and veins, together with the connective tissue around them, are often infected when the Fallopian tubes are normal.

The relative frequency of these two routes is unknown. The gonococcus, formerly thought to thrive only on epithelial surfaces, has been found in connective tissue and is known to be carried by the lymph route.† Its presence in the uterine muscles ‡ and in the endocardium § has also been demonstrated. The propagation of other infectious microbes in the blood and lymph vessels and their transmission through them has long been known. The investigation of Leopold shows the endometrium to be so abundantly supplied with lymphatic vessels that it has even been called a lymphatic gland. The lymph route is demonstrated from the bacterial and from the anatomical standpoints.

The lymph route is very apt to be the mere channel of infection and may itself show no trace of inflammation, or may be inflamed throughout. The bacteria by whatever route carried will colonize only at points of least resistance. The resistance along the route may be sufficient to withstand their force. Even though the infection may have passed along the lymph and blood channels to the tube, peritoneum and ovaries without intervening abscess or even inflammatory effusion, this fact does not prove that the infection was carried by the mucous surfaces.

* Poirier: Le Progrès Médical, 1889.

† August Martin: Lehrbuch der Frauenkrankheiten, 1895.

‡ Centralblatt für Gynäkologie, 1895. § Leyden.

A third route of infection from extra pelvic organs is illustrated by the cases of Binkley * and Robb.† Binkley's case was purulent salpingitis following purulent appendicitis, a sequence frequently observed. Tubercular peritonitis ‡ often extends to the tube, ovary and uterus. Tubercular infection may rarely originate in the cervix uteri and reach the ovaries and tubes from that point.§ Usually it comes from the peritoneum.

It should be remembered that the presence of circumuterine inflammation is not proof of its uterine origin. The infection may originate in the intestines, the bladder, the perineum, or inflammation of the uterine appendages may be a sequel of the acute infectious diseases. Pelvic hematocele may become the seat of infection and be the predisposing cause of a pelvic abscess. Laceration of the perineum and other traumatisms of parturition and of surgery may also open the way for the entrance of infection through the blood and lymph channels. The causative relations between metrititic and perimetritic inflammation may then be reversed, *i.e.*, the infection may reach the uterus through the outlying structures instead of the outlying structures through the uterus.‖

Bacteriology.—The microbes of the infectious diseases have been quite generally found in the genitals. Among them are the gonococcus, the tubercule bacillus, the streptococci and staphylococci, the bacterium, coli communis, the pneumococcus,¶ the typhoid bacillus,** the microbe of diphtheria †† and the bacillus of malignant œdema.‡‡ At least two cases of actinomycosis have been reported.§§ One of the most frequent modes of introducing the bacteria is by uncleanly operations, "local treatments" and examinations.

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* Binkley : Cincinnati Lancet and Clinic, March 31, 1895.

† Robb : Johns Hopkins Hospital Bulletin, 1892, No. 20.

‡ Hegar : Genitaltuberculose der Weiber. Stuttgart, 1896.

§ Williams : Johns Hopkins Hospital Report, 1892.

‖ Bland Sutton : Surgical Diseases of the Ovaries and Fallopian Tubes, 1891.

¶ Frommel : Centralblatt für Gynäkologie, 1892, No. 11.

** Werth : Deutsche Medicinische Wochenschrift, 1893, No. 21.

†† *Ibid.*

‡‡ Witte : Zeitschrift für Geburtshülfe und Gynäkologie, 24.

§§ Zemann : Med. Jahrb. Wien, 1883. Centralblatt für Gynäkologie, 1884, page 560 Granger Stewart and Muir, Edinb. Hosp. Reports, 1, Monatschrift f. Geb. und Gyn., 1895, quoted by A. Martin, Krankheiten der Eileiter, page 189.

PARAMETRITIS.

Pelvic Cellulitis, Perilymphangitis, Periphlebitis.

Exception has been taken to the name cellulitis, since all tissues are made of cells and since therefore in the wide sense all inflammation is cellulitis. The word is here used in accordance with the established usage and is limited to inflammation of the cellular tissue around the uterus and vagina, more especially that between the folds of the broad ligaments. The term parametritis is too restricted, since the disease may occur in the lower regions of the pelvis around the vagina and rectum. Cellulitis bears anatomically the same relation to peritonitis as pneumonia bears to pleuritis, *i.e.*, it is usually associated with a variable degree of peritonitis.

The lymph spaces have no walls save the cellular tissue around them. Inflammation of this tissue therefore must be cellulitis. When infection is traveling by way of the lymphatic vessels and veins which have walls and inflammation results, it will first be in the walls. An early attempt is made to check the spread of the disease by thrombosis. Destruction of the walls of the vessels may follow. The inflammation will then spread to the surrounding structures. This would be perilymphangitis or periphlebitis. The tissue around the vessels, however, is cellular or connective tissue. The disease in its full development is therefore cellulitis. To define cellulitis as perilymphangitis or periphlebitis might therefore be strictly accurate.

Formerly cellulitis was considered the central lesion in pelvic inflammation. Salpingitis, ovaritis and peritonitis were scarcely recognized as surgical diseases. A great advance was made in practical pelvic pathology when Batty, Hegar, Tait and others showed the vastly greater relative importance, from the surgical standpoint, at least, of tubal inflammation. When purulent accumulations in the pelvis were commonly attributed to cellulitis, when they were usually left to themselves or treated by incision and drainage into the vagina, the failures were many and unexplained. As soon however as they were generally recognized as accumulations of pus in the Fallopian tubes it was easy to understand why incision and drainage were so often followed by failure. It was because the tube was lined by mucous membrane and because chronic suppuration of mucous surfaces, even though drained, is most intractable. On the other hand a cellulitis abscess surround-

ed by cellular tissue when emptied naturally closes spontaneously. Pelvic cellulitis therefore unless complicated by tubal communication either terminates rapidly by resolution with complete recovery, or if suppuration occur it empties itself spontaneously or is emptied by incision and like a furuncle, which it resembles, promptly disappears; hence the cellulitis abscess unless of tubal origin seldom becomes chronic and therefore has little or no part in the more frequent and more familiar chronic pelvic suppuration for which the uterine appendages and sometimes also the uterus have to be removed.

The clinical experience of the laparotomist shows pelvic suppuration to be almost always in the tube. It rarely shows a trace of pus in the cellular tissue below and if perchance an abscess be found there it usually gives evidence of having burst from the tube into the broad ligament.

The above facts have led to a tendency in late years, especially among laparotomists, to deny the existence of pelvic cellulitis and to announce the almost universal proposition, except in rare instances of puerperal origin, that all cases of extra-uterine inflammatory exudate are essentially of tubal development, that ovaritis and peritonitis are always secondary to tubal disease, and that an abscess in the broad ligament is only there when a previous infection of the Fallopian tube has forced its way through the mesosalpinx into the parametrium. In this connection note that the disease occurs in men, who have no Fallopian tubes. Why should the cellular tissue of the pelvis be free when the same tissue in every other part of the body is subject to inflammation? Would it not be just as reasonable to assume that pleuritis is the central lesion in all pulmonary inflammation, or that perinephritis is the essential factor in all cases of contracted kidney? The question however is not settled by *a priori* reasoning. Post-mortem studies prove the frequent existence of acute cellulitis abscess not only by rupture from the sactosalpinx but also by the direct lymphatic or venous route.

OBJECT OF INFLAMMATION.

Circumuterine inflammation involves diverse changes in the Fallopian tubes, ovaries, pelvic peritoneum, lymphatics, lymph spaces, veins and pelvic cellular tissue. Inflammation of the Fallopian tubes or ovaries may have the closest relation with inflammation of any or all of these structures. In this connection it is

essential to grasp not only the nature and anatomical results but as well the object of inflammatory process. The greatest danger is not from the inflammation but from the infection. Inflammation is an effort of nature to defend the general system against infection. If the infection has passed by continuity of surface into the tube it no sooner reaches the pelvic cavity than the peritoneum attempts to protect itself from further invasion by prompt closure with inflammatory adhesions of the abdominal opening of the tube. The uterine end may likewise be closed and the poison thereby shut off also from the endometrium.

If the infection has reached the pelvic cavity and produced peritonitis, unless the inflammatory process promptly confines the poison by thrombic plugging of the vessels, unless the lymph effusions are shut off with peritoneal adhesions and a protective wall is formed, the inflammation will speedily involve the whole peritoneum ; the infectious poison will be rapidly increased and poured in fatal quantities through the broad peritoneal surfaces into the general circulation.

We are familiar with the profound depression of the nervous system, the continued nausea, the anxious facies, the paretic and distended bowels, the tympanites which go to make up the symptom group of peritonitis. These grave symptoms are wrongly attributed to peritonitis ; they are rather the result of the profound ptomaine poisoning which the peritonitis is perhaps unsuccessfully striving to shut off from the general circulation.

When the infectious poison starts from the endometrium and goes forward by way of the lymph channels or veins in the cellular tissue of the broad ligaments, these vessels may simply transmit the poison to the peritoneum, tube or ovaries and themselves escape inflammation, or the course of the poison may be arrested by thrombic plugging of the vessels and by consequent extensive and destructive perilymphangitis or periphlebitis. The result may be an almost overwhelming pelvic cellulitis. The inflammation may be for the most part confined and the poison may spend its force within the limits of the cellular tissue of the broad ligament. These destructive processes may be so great as to end in the permanent impairment of the pelvic nutrition and in chronic invalidism, but the pelvic cellular tissue has taken the brunt of the poisonous attack, sacrificed itself and perchance saved the life of the woman.

A BASIS FOR THE DIAGNOSIS OF THE SO-CALLED INFLAMMATORY DISEASES OF THE UTERUS.*

By C. S. Bacon, B.Ph., M.D.,

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The first requisite for making a differential diagnosis of the pathological conditions is a knowledge of the nature of their essential characteristics. A great help to this is a proper nomenclature and classification. When different pathological conditions present similar symptoms it is often difficult to differentiate between them. So long as we know diseases only by their clinical or morphological symptoms, we have confused pictures of different things that overlap each other and cannot be distinctly separated. It is therefore desirable, as far as possible, to form our pictures of disease from their etiological elements. When this can be done, it is of practical value, because the treatment of a disease should be based upon its etiology. The chief object of my paper is to find a basis for differentiation in a classification of a group of diseased conditions which symptomatically have a confusing interrelation.

The definition and classification of the so-called inflammations of the uterus have undergone a marked change in the last twenty years, corresponding to the development of our knowledge regarding them, as well as to the change in the meaning of the term inflammation. At first we were obliged to be content with a diagnosis based on clinical symptoms, and we spoke of endometritis hæmorrhagica, endometritis catarrhalis or purulenta, endometritis dysmenorrhœica, etc. This classification is still made use of by Pozzi. Then the microscopical investigations of C. Ruge and others led to an attempt to build up a classification based upon anatomical or morphological symptoms, and we distinguished endometritis glandularis, endometritis interstitialis, endometritis glandularis ectatica, etc. The latter classification proved of little or no practical value, since the morphological changes do not correspond to the clinical symptoms and neither explain their causation nor give any indication for

* Read as part of a symposium. For *Discussion*, see page 64.

treatment. Doléris was one of the first to contend that genuine metritis is always of microbic origin, which he did ten years ago when the great importance of bacteria in pathological processes was not nearly so well known as to day. In 1894 Van Tussenbroeck and Mendes de Leon distinguished between catarrhal endometritis of bacterial origin and pseudo-endometritis, a condition of hyperplasia or atrophy of the uterine mucous membrane. The first important attempt to form a comprehensive classification on an etiological basis was made by Prof. v. Winckel in his elaborate paper on the etiology and symptomatology of endometritis, read at the meeting of the German Gynæcological Society in Vienna in 1895. He divided the diseases of the endometrium into two groups. In the first he included those cases whose bacterial origin is not yet recognized, and in the second those known to be due to bacteria. His first group includes :

(*a*) Those cases due to circulatory disturbances arising from displacements, neoplasms, diseases of the heart, lungs, etc., or abnormalities in the blood composition.

(*b*) Those due to acute infectious diseases.

(*c*) Those due to intoxication.

(*d*) Those due to burns.

(*e*) Those due to retention of egg or decidual particles after labor or abortion.

(*f*) The isolated form of endometritis exfoliativa.

The bacterial group includes :

(*a*) Endometritis gonorrhoica.

(*b*) Endometritis tuberculosa.

(*c*) Endometritis septica puerperalis, due chiefly to streptococcus infection.

(*d*) Endometritis saphophytica.

(*e*) Endometritis syphilitica.

At the same meeting Wertheim read a paper on gonorrhœa of the uterus, in which he contended that the gonorrhœal infection is not confined to the endometrium as often as is generally supposed. Döderlein in Veit's "Handbook of Gynæcology" adopts substantially von Winckel's classification, but emphasizes the same point in regard to inflammation in general as that which Wertheim had upheld in regard to gonorrhœa ; namely, that the distinction between endometritis and metritis cannot be maintained. Schauta in his "Lehrbuch der Gesammenten Gynœkologie" in one chapter considers infectious diseases of the female genitalia under the sub-

divisions—wound infection, venereal infection (*a*) gonorrhœal and (*b*) syphilitic, and tubercular infection. In another chapter under pathological new growths he considers the hyperplasias and hypertrophies of the uterus. In the latest German work on Gynecology, the first quarter only of which has appeared, in the system of Northnagel written by Professors Chrobak and Rosthorn, the authors promise to consider diseases from the etiological standpoint so as to make the cause the unifying factor. The same principle was accepted by Kocher and Tavel in their recent interesting work on surgical infectious diseases. Winter, it is true, in his "Gynæcological Diagnosis," retains the term endometritis, and, abandoning any attempt to make a scientific classification, adopts for practical use the divisions endometritis catarrhalis, endometritis gonorrhoica, endometritis hæmorrhagica, endometritis dysmenorrhœica, endometritis exfoliativa, etc. This is an exception to the general tendency toward a uniformity of classification on an etiological basis.

That classification is best which best stimulates investigation. The most promising investigation in the realm of female diseases is that which seeks to discover the cause of disease. When once the causative agent and its life history are known we have some hope of successfully combating it. Until it is known the confusing clinical and morphological symptoms are liable to lead one astray.

The attempts of gynæcologists to find out the causes of uterine diseases and make this knowledge a basis of classification have been paralleled by the efforts of pathologists to secure a clear conception of the nature of inflammation. Formerly inflammation was generally considered a disease to be combated. We still speak of curing an inflammation. Indeed, our program for this evening calls for a paper on the treatment of inflammation of the uterus. Much recent work, however, tends to show that inflammation is essentially a healing or protective process, one that makes for the good of the organism. It is therefore something to be favored or perhaps to be created if possible when unfortunately lacking.

A difference of opinion arises when we attempt to agree upon what are its essential features. Many regard Metchnikoff's biological definition of inflammation as the only strictly logical and consistent one. He bases his idea of inflammation upon his study of comparative pathology, and defines it to be a phagocytic reaction on the part of the organism against irritants. This reaction is

carried out by the mobile phagocytes, sometimes alone, sometimes with the aid of the vascular phagocytes or of the nervous system. According to this definition, the vascular system plays a secondary role in the inflammatory process. There may be inflammation without a vascular system. The blood current simply supplies phagocytes in abundance where they are needed. There are only two essential factors, the etiological—the irritant; and the curative—the phagocyte. The irritant is generally of microbic origin.

Many object to this definition on the ground that it singles out one process, and that not the most important, to take the place of all the changes for which the name inflammation has so long stood. Yet there is a lack of agreement among the objectors to Metchinkoff's theory as to what are the most essential changes. While some ascribe more importance to the vascular changes, others lay greater stress on the disturbed nutritive processes. Under the circumstances it is not strange that Thoma discards entirely the term inflammation. He holds that it cannot legitimately be restricted to a simple process like phagocytosis, and that on the other hand its general use is so indefinite that it becomes synonymous with disease. Hence he would displace it by terms describing more exactly processes commonly grouped together.

Such a course would be analogous to that adopted in discarding the term phthisis. We formerly had fibroid phthisis, tubercular phthisis, etc. When it was found that these various pathological conditions had nothing essential in common, this grouping was given up for one resting on an etiological basis.

Whatever may be the fate of the general concept inflammation, I believe it to be in the interest of accuracy to discard it in the study of the diseases of the female genitalia, including at present especially the diseases of the uterus, and substitute others which better include the elements of the known pathological processes or diseased conditions. For that large and important group of so-called inflammations due to microbic invasion, we substitute the name infectious disease, which rightfully calls attention to the etiological factor. For the other large group which includes most of the cases to which the name chronic inflammation is generally applied, there are various etiological factors, but the morphological changes have a greater or less similarity characterized by an abnormality in the growth of a part or all of the tissue elements, and hence we make a grouping on the basis of the pathological or

anatomical structure, and we speak of hypertrophies and hyperplasias and atrophies and aplasias or hypoplasias.

This then is the classification that I would adopt in the diagnosis and study of that class of female diseases formerly designated inflammations. It will also prove of practical use in determining prognosis and the principles of treatment.

The more important infectious diseases are gonorrhœa, tuberculosis, the streptomycoses, the staphylomycoses and the saprophytic infections. Each of the infectious diseases has not only its distinct etiological factor but also a distinct pathological process and sufficiently characteristic morphological and clinical symptoms to merit a separate name and differentiation from its related diseases.

It is as a rule desirable to consider each of these diseases as an entity and not make separate diseases because different organs are affected. Difference of habitat makes a certain difference in the life history of the infecting agent, but there is always a great similarity in the mode of growth, whether it be in the vulva, the uterus or the Fallopian tubes, and for therapeutic purposes it is very important that we consider the disease in its entirety instead of confining our attention to its manifestation in a particular organ. Hence in general I would prefer to study infectious diseases as wholes instead of considering gonorrhœa of the uterus, streptococcus infection of the uterus, etc.

If however it be desirable to confine our attention to the uterus, we note, first, that it is impossible to make a very sharp distinction between infections of the cervix and those of the corpus. The idea that the cervix is much more frequently infected than the corpus of the uterus rests, first, upon the supposed fact that cervical catarrh is much more common than catarrh of the corpus, and secondly, upon the admitted protective power of the cervical mucous plug. In regard to the first point it may be said that contrary to the general opinion, Van Tussenbroeck and Mendes de Leon have found catarrh of the corpus more common than that of the cervix. Concerning the second point we may consider the sources of infection. Generally infection follows labor or abortion, dirty gynæcological treatments, or coitus, corresponding to infection post-partum or post-abortum, traumatic infection and venereal infection. In the first two cases the cavity of the corpus is directly infected by the examining fingers or by instruments. In venereal or gonorrhœal infection both Wertheim and Menge

nave found that the mucous plug in the cervical canal does not protect the uterine cavity from penetration of the germs as much as was supposed. Only in tuberculosis, where the infection is almost always secondary, the corpus alone is generally affected. With this exception, for diagnostic purposes we may ignore a distinction between infection of the cervix and infection of the corpus.

It is often impossible to distinguish between an endometrial and a myometrial infection. The intimate hæmic and lymphatic vascular connection between the mucosa and the muscularis which results from the immediate transition from the former to the latter without the intervention of a submucosa allows a frequent deeper infection than occurs in the case of other mucous membranes. In severer grades of streptococcus infection the muscularis is penetrated by colonies of bacteria which often form abscesses. In staphylococcus infection the invasion of the deeper tissues, although not so rapid, is not infrequent. In tubercular infection the myometrium is very often involved. In case of gonorrhœal infection the old idea that the infection is confined to the mucous membrane is still vigorously supported by eminent investigators like Bumm, while Wertheim contends for the frequent involvement of the entire organ. Madlener and Menge have found gonococci in abscesses in the uterine wall, proving that the myometrial infection can occur. Future investigation must demonstrate how common is the deeper invasion. All these facts, however, show that the myometrium may be infected along with the endometrium in any case. Under favorable circumstances, when the virulence of the infecting agent is slight and the leucocytic reaction good, the bacteria may be confined to the outer layer of the mucous membrane by the circumscribing leucocytic wall. In case of a virulent infection or slight reaction the bacteria are liable to penetrate deeply. Clinically it is generally impossible to determine the extent of the invasion.

It now becomes necessary to introduce the term chronic infection and define its meaning. A chronic infection is simply the pathological condition that results from the continual presence of the infecting agent. The persistence of the infecting agent is due to the failure of the tissues to react sufficiently to expel the irritant. The essence of this reactive process consists in the destruction of the invading microbes by the leucocytes which are attracted to them through the positive chemotactic properties of the bacterial toxines. The neutralization of the toxines may go on hand in

hand with the destruction of the bacteria. When the leucocytosis is sufficient to destroy all the bacteria and their toxic products are eliminated the reactive process is complete. The products are removed through the circulation when the amount is small, or they may be in part cast off from the free surface of the mucous membrane in the form of a muco-purulent discharge. If for any cause the reaction is incomplete, more or less of the bacteria remain in the tissues. Sometimes they may exist in circumscribed abscesses, as is the case with the tubercle bacilli in the caseous tubercular abscesses. At other times they continue a true parasitic existence in and among the tissue cells. When they remain in the tissues for some days or weeks we have a chronic infection. In such cases their irritant action doubtless becomes modified in time as a result of the conditions under which they grow, but probably they always continue to cause some pathological changes by their presence.

The study of the pathological and anatomical changes resulting from both acute and chronic infections leads us to a consideration of the second group of uterine diseases, namely, the hyperplasias, hypertrophies and atrophies. Since a true hypertrophy is difficult to demonstrate, and since a hyperplasia—that is, a disproportionate growth of one tissue—is generally found, we will for brevity use the term hyperplasia to designate the whole group. A hyperplasia of certain elements generally implies a hypoplasia of other elements.

No sharp distinction can be made between hyperplasia and the reactive processes occurring in an infection. In the severer grades of infection the degenerative changes in the tissue cells which are due either to the pressure of the leucocytes and the exudation, to the bacterial poisons, or to over-stimulation in the immediate vicinity of the infective agent, at first predominate. In the slighter grades of infection and on the boundary of the infected zone in the severer grades there is cell proliferation. Fibroblasts and new connective tissue form from the proliferating cells of the connective tissue and possibly from the leucocytes. The gland cells are likewise stimulated to proliferation by the increased supply of nutrition furnished by the exudation and perhaps by the leucocytes. The extent of these proliferative changes depends not only on the duration of the exciting cause but also on the continuing influence of the secondary vascular changes.

Thus arises either a fibrous or a glandular hyperplasia as a re-

sult of infection. But infection is not the only cause of hyperplasia. It is often found not only where there is no evidence of the presence of bacteria, but also where the history of the case gives no reason to assume their presence. We cannot doubt that circulatory disturbances lead to nutritive changes which result in such hyperplasias. According to Adami's convenient classification the non-inflammatory causes of hyperplasia may be (*a*) increased arterial nutrition, (*b*) increased venous congestion, (*c*) lymphatic obstruction. These would explain the instances of endometritic hyperplasia found in cases of heart, lung or kidney disease, displacements of the uterus, etc. The hyperplasia endometritis ovärialis, the endometritis hyperplasirende or fungosa of Olshausen, according to the theory of Breunecke would be included among the hyperplasias due to increased arterial nutrition where the vascular stimulus came from the congested or diseased ovaries.

It is very interesting to inquire whether the hyperplasias of non-infective origin can be differentiated anatomically and clinically from those which result from the reactive processes which follow infection. The changes in the vessels which have been described as consisting at first in a swelling up of the endothelium, with the occurrence of more or less serous and corpuscular exudation and later in a hyaline degeneration of the vessel walls, are probably common to both. The changes in the glands are essentially the same in both. In the connective tissue the leucocytic or small-celled infiltration is usually held to be pathognomonic of the infective sequelæ. Clinically hæmorrhage or the presence of a muco or muco-sanguineous discharge may occur in hyperplasia from any cause, but a distinctly purulent discharge probably never occurs in hyperplasia of non-infective origin, and when not associated with a persisting infection is at least evidence of its previous existence.

Sänger has recently proposed the term "residual gonorrhœa" to apply to the pathological process which persists after disappearance of the gonococci. The term has the advantage of being in line with the etiological classification, and we might use the word residual infection, to designate the hyperplasias following infection. The use of the term infection where the infecting agent is no longer present is apt to be confusing, and hence it seems desirable to use the term infectious hyperplasia, or better, pathological change of infectious origin.

Hyperplasia of the cervix without involvement of the corpus

occurs more frequently than is the case with infections. The various forms, hyperplasia follicularis portionis, ectopium cervicis, etc., are too well known and too easily diagnosed to require further attention.

Hyperplasia endometrii and hyperplasia myometrii may also exist to a certain extent independently of each other, but an interstitial hyperplasia generally involves the connective tissue of the muscular wall to a certain extent. The various forms, hyperplasia interstitialis, hyperplasia glandularis, hyperplasia diffusa, present similar clinical symptoms, namely, hæmorrhage, catarrh, premenstrual pain, sometimes tenderness and enlargement of the uterus, so that it is generally impossible to differentiate them clinically. Hyperplasia fungosa, the endometritis fungosa of Olshausen, is characterized by excessive hæmorrhage. Hyperplasia exudativa or exfoliativa is the well-known membranous dysmenorrhœa.

It is not within the scope of this paper to make detailed differential diagnoses between the various uterine infections or the different hyperplasias or to separate each of them from other pathological conditions, like the tumors, which have similar symptoms. My purpose was rather to furnish a basis for diagnosis in a classification that is logical and practical. The ultimate test of the value of a classification must be its adaptation to the practical needs of clinical experience. To show the practicability of the classification proposed, I will in closing present the outline of a scheme of some of the more important diagnostic points.

Means of Diagnosis.

ANAMNESIS.

History of traumatic, puerperal or venereal infection, or of general disease or local disturbance.

Clinical Symptoms.

General.

Due to toxinæmia, bacteriæmia. (Fever, etc.)

Due to reflex mechanism. (Nervous, digestive, etc.)

Local.

Discharge (menstrual or intermenstrual).

Amount, duration, color, odor, character as mucous, purulent, bloody.

Pain.

From uterus, from adjacent organs.

Reproductive functions.
Sterility, abortions, labors.

Examination.

Inspection and palpation.
Discharge. Use of Schultze's tampon. Color, odor, consistency.
Uterus. Size of body and cervix. Tenderness. Cavity (examination by sound and finger).
Condition of neighboring organs.

Histological and bacteriological examination.
Collection of discharge from cervix and body.
Uterine scrapings.
Cultures.
Inoculations.

INFECTIOUS DISEASES.

STREPTOMYCOSES.

(Including erysipelas and so-called diphtheria.)

(*a*) Acute.

1. *Puerperal* (post-partum or post-abortum).
Most common puerperal infection.
History of internal examination or instrumentation.
General symptoms, violent, due to toxinæmia and bacteria, fever, etc.
Local symptoms—copious bloody-purulent discharge. Putrid odor due to contamination with saprophytes.
Pain from uterus, peritoneum.
Obstruction.
All bacteriological tests positive.

2. *Non-puerperal traumatic.*
History of use of sound, douche tube, etc.
Symptoms and examination as in puerperal streptomycoses.

(*b*) Chronic.
History of acute attack not often lacking.

STAPHYLOMYCOSES.

(Also includes cases of so-called diphtheritic ulceration.)

(*a*) Acute.

1. *Puerperal.*
Less common than streptomycoses infection.

General symptoms less violent than in former infection; bacteriæmia not so common.

Bacteriological examination conclusive.

2. *Non-puerperal traumatic.*

Most common.

May be secondary to other infections.

(*b*) Chronic.

Common.

Differentiated through bacteriological examination.

GONORRHŒA.

Uterus affected in about one-half of all cases of gonorrhœa.

Gonorrhœa occurs in ten to thirty per cent. of all women.

(*a*) Acute.

1. *Puerperal.*

Not rare. Due generally to urethral or vulvar infection during pregnancy.

General symptoms of intoxication are slight. Occasionally gonorrhœal arthritis.

Local symptoms—purulent lochia, pain from affection of tubes and peritoneum.

Inspection may show infected urethra or vulva.

Microscopic examination of stained slides. Differentiate by use of Gram.

2. *Non-puerperal traumatic.*

Not uncommon from gynæcological instruments, pessaries, etc.

Sequel of vulvo-vaginitis in young girls.

3. *Venereal.*

Chief infection.

(*b*) Chronic. (Includes so-called latent.)

One of the most common chronic infections of the uterus.

History of infection.

Frequent sterility on account of tubal affection.

Inspection may show infected Bartholin's glands.

Palpation shows thickened tubes, especially salpingitis isthmica nodosa of Chairi and Schauta.

Bacteriological examination may be assisted by artificial excitation of "latent" germs through use of irritant, intra-uterine applications or indulgence in improper diet.

TUBERCULOSES.

Two-thirds as often in the uterus as in the tubes.

(*a*) Primary.

Rare. Friedlander's and Meyer's cases in the cervix.

(*b*) Secondary.

Generally in the body. Follows tubal disease.
There may or may not be symptoms of general tubercular infection.
Discharge sometimes caseous.
Pain not important.
Sterility.
Uterus large. Tubes affected.
Microscopic examination of uterine scrapings.

SAPROPHYTIC INFECTION OR INTOXICATION.

Due to non-pathogenic bacteria and yeast fungi, and also at times pathogenic bacteria, streptococci, bacilli colli communes, etc., which live in the discharge and in dead tissue.

1. *Puerperal.*

Very common.
Symptoms of intoxication but not bacteriæmia.
Putrid discharge.
Uterus tender, sometimes tympanitic.
Bacterial findings not conclusive.
Results of intra-uterine irrigation diagnostic.

. *Non-puerperal traumatic.*

Often secondary to infection.
Foul discharge.
Bacteriological examination.

HYPERPLASIAS AND HYPERTROPHIES.

Hyperplasia Cervicis.

Including as more or less separate forms,
Elongatio portionis.
Ectropium cervicis.
Hyperplasia cervicis follicularis (ovula Nabothii).
Erosio portionis.
Diagnosed by physical examination.

Hyperplasia endometritis.

Clinically not to be distinguished are :
Hyperplasia interstitialis.

Hyperplasia glandularis.
Hyperplasia interstitialis glandularis.
Hyperplasia glandularis interstitialis.
Hyperplasia diffusa.
Hyperplasia polyposa (mucous polyp).

History shows absence of infection. General symptoms are due rather to the reflex mechanism and in hæmorrhagic cases to anæmia than to intoxication or to bacteriæmia.

Local symptoms.

Increased menstrual hæmorrhagic discharges, often catarrh.
Frequent sterility and abortion.
Uterus generally enlarged, often tender.
Endometrium bleeds freely on introducing sound, often soft feel.
Bacteriological examination negative.
Microscopical examination of scrapings diagnostic.

Hyperplasia exudativa.

(Membranous dysmenorrhœa.)

Casting off of membrane diagnostic.

TUMORS.

Chorio-carcinoma. Syncytioma malignum.

(Deciduoma malignum. Sarcoma deciduocellulare.)

History.

The chief symptom, persisting hæmorrhage, begins within a few weeks after labor or abortion, or especially after the birth of a hydatid mole.

General symptoms arise from the presence of metastases in the lungs and other organs.

Local examination shows frequent infective metastases in the vagina.

Uterus is enlarged. In its cavity is found a spongy mass more brittle than in fungus hyperplasia.

In the parametrium may also be metastases.

Microscopic examination shows the characteristic large cells or syncytial masses penetrating the tissues.

Carcinoma.

The various forms of polypoid, infiltrating, ulcerating, diffuse and circumscribed cancers of the vaginal portion, the cervix and the body are distinguished from the non-malignant hyperplasias chiefly by means of microscopic examination.

The hereditary history has significance.

Bloody discharges, especially those occurring post coitum, important.

Pain especially significant in corporeal cancers.

Sarcoma.

Generally arises in the mucous membrane of the body or in a myoma.

Most important symptoms are irregular hæmorrhages.

Microscopic examination diagnostic.

Myoma.

Most important from a diagnostic standpoint are the submucous myomes.

Distinguished from hyperplasia polyposa by examination of uterine cavity with finger, and by microscope.

426 CENTER STREET.

THE PROGNOSIS OF INFLAMMATORY CONDITIONS OF THE UTERUS, ENDOMETRITIS AND METRITIS.*

BY J. T. BINKLEY, JR., M.D., CHICAGO.

I have often thought that the prognosis of endometritis deserves more consideration than is usually given it in the textbooks on gynæcology. In all chapters upon this subject, either no mention at all is made of the prognosis, or it is so lightly touched upon, that it is described in a very few lines. The prognosis is of great, and possibly vital importance to the patient, and should be clearly made.

The prognosis of an inflammatory condition of the uterus will, of course, depend upon the cause and character of the inflammation and upon the conditions of the organ and surrounding structures.

The prognosis of endometritis *per se* is not always so grave or serious, but unfortunately the sequelæ are what we have to contend with and take into consideration when a prognosis is made. The usual tendency of all inflammatory conditions is extension and invasion of the surrounding structures and organs. Most espe-

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* Read as part of a symposium. For *Discussion*, see page 64.

cially is this so in inflammation of the uterus, because of the abundant lymphatic supply. In fact, the interior of the uterus may be likened to one large absorbing gland.

In addition to this, the Fallopian tubes are also direct channels for the further transmission of infection.

With this reference to the possible, and in fact very probable sequelæ of intra-uterine inflammation, we pass on to the conditions of the organ which may be favorable or unfavorable to the prognosis.

Given a case of endometritis in a woman of good general health, with a well-developed uterus, normal in position, and with a fairly open cervical canal, the prognosis, with properly directed treatment, would be most favorable.

Given a case with opposite physical conditions, the patient anæmic, the pelvic organs imperfectly developed or so displaced that the cervical canal is rendered indirect, and partly occluded, however careful the treatment may be, the prognosis is unfavorable.

In the cases of mechanical injury, resulting from labor, such as lacerations of the perinæum or cervix with attendant sub-involution, properly directed treatment, if not too long delayed, will usually effect a cure.

One other factor which largely influences endometritis is that of constricted cervical canal. The prognosis of endometritis above such canal, could be considered favorable under proper treatment.

Passing from the conditions, I wish to touch lightly upon the character of infections which influence the prognosis in these cases.

The prognosis of a gonorrhœal endometritis, for instance, is always unfavorable. It is next to impossible to check the invasion of these germs. Therefore the prognosis is most unfavorable. No doubt all forms of intra-uterine infection are transmitted indirectly through the lymphatic circulation, and directly through the tube. Which of these channels is the most usual, is a question, in the majority of instances. However, it is pretty well demonstrated in the gonorrhœal variety of infection, that the germ is transmitted through the Fallopian tube. As a proof of this, we find the left side most frequently infected, as the left tube is the larger.

After reviewing the above, we are led to conclude, first, that the disease *per se* is not dangerous to life if uncomplicated, and if uncomplicated will usually yield to treatment.

Second, that some of the most obstinate cases frequently recover after the menopause.

Third, that endometritis undoubtedly predisposes to malignant degeneration, notwithstanding the firm denial of such a possibility by many authors.

Fourth, that if left to its own tendencies, endometritis will almost surely involve the deeper structures, producing metritis, going further and attacking the peri-uterine covering, and further, deposits will be made in the cellular tissue, attacking the ovary and extremity of the tube by this lymphatic extension, or there will be direct deposit of the germs in the lumen of the tube, or on to the peritoneum, through the tubal canal.

So our prognosis of neglected cases will be a cellulitis salpingitis, ovaritis, peritonitis, with the formation of abscesses in the pelvic cavity, great destruction of tissues and organs, and frequently loss of life.

103 State Street.

TREATMENT OF ENDOMETRITIS.*

By T. J. Watkins, M.D.,

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The treatment of endometritis due to malignant disease, syphilis, tuberculosis and the like, need not be considered. The treatment of cervical and corporeal endometritis will not be considered separately, because they are usually associated, and because, when endoservicitis exists alone, it is usually consequent upon laceration.

For convenience, endometritis will be classified as acute septic, acute gonorrhœal, chronic catarrhal, chronic septic and chronic gonorrhœal. The gonorrhœal variety is septic, but as it is known to be due to a specific cause, it is advisable to treat of it separately.

1. *Acute Septic Endometritis* —This variety is usually the result of infection introduced at the time of abortion or labor, or by the sound or some other instrument in the exploration or treatment of

* Read as part of a symposium. For *Discussion*, see page 64.

the uterine cavity. When it is of puerperal origin, the cavity of the uterus should be thoroughly explored under strict aseptic precautions. When necessary, an anæsthetic should be given and thorough dilatation made. The uterus should then be thoroughly irrigated with an antiseptic solution. I believe that it is very important to get rid of as much of the septic material retained in the uterine cavity, as possible by the use of an antiseptic irrigation, before any abrasions are produced. The intra-uterine douche should always be given under low pressure, and a point which has a large space for the return current should invariably be used.

If any remnants of placental tissue or membranes be found they should be thoroughly removed, preferably with the finger, but the placenta forceps or dull curette may be employed. The objection to the use of the sharp curette in these cases is quite general, because with it, more or less comparatively healthy mucous membrane will of necessity be removed. This membrane, when intact, guards against infection, and the wound which is left after its removal gives the infection direct access to the blood vessels and lymphatics of the uterus. The cavity of the uterus should again be irrigated with an antiseptic solution, and if the uterus does not seem to be in condition to afford free drainage, the gauze drain should be inserted. If a distinct suppurating cavity is present, the use of a tubular drain may be advisable. In a case under my care, in which a distinct suppurating cavity existed in one of the horns of the uterus, gauze drains proved inefficient. Tubular drainage would probably have hastened the recovery in this case. If there is suppuration or necrotic tissue in the uterine cavity, daily intra-uterine irrigation or packing will be necessary as long as the condition persists; otherwise, vaginal douches may be sufficient.

When infection occurs from the introduction of instruments into the uterine cavity, vaginal douches and constitutional treatment may be all that is required. If necessary, the uterus may be irrigated and drained. If the cervix has been sutured, the sutures should be removed, the wound left open and cauterized.

2. *Acute Gonorrhœal Endometritis.*—Before considering this variety of endometritis, I will submit the following questions:

(1) In what proportion of cases of gonorrhœa in the female does the infection extend into the uterus?

(2) How can this extension be prevented?

A. Martin is of the opinion that gonorrhœa extends into the

uterus in a minority of cases. Most of the authorities whom I have had occasion to consult do not consider this question.

In the majority of cases of acute gonorrhœa which I have treated, recovery has taken place without infection of the endometrium. I am of the opinion that gonorrhœa will seldom extend from the vagina into the healthy uterus during the inter-menstrual period, providing that ordinary cleanliness be observed. During health, bacteriological investigation has shown that the cervix with its canal filled with leucocytes guards the cavity of the uterus against invasion of the bacteria which normally exist in the vagina. When uterine leucorrhœa exists and during menstruation, this protection to the uterine cavity is removed. Gonococci thrive better in blood serum than in any other known culture medium. I believe, therefore, that when gonorrhœal vaginitis exists, vaginal douches of the temperature of the blood should be used during menstruation, and that in cases of gonorrhœa, the cavity of the healthy uterus should not be invaded by the sound, dilator, curette or irrigator.

If gonorrhœa occurs in a patient subject to uterine leucorrhœa, specific infection of the endometrium is almost certain to occur. The necessity of active treatment of vulvar and vaginal gonorrhœa as prophylaxis against specific endometritis is obvious.

Pozzi believes that the treatment should principally consist of the frequent use of slightly caustic and intra-uterine irrigations.

Polk advises treating the disease on the principles advocated in the treatment of gonorrhœa in the male. The cervix is dilated in narcosis, the uterus irrigated with about one quart of a one to three thousand solution of bichloride of mercury, and the uterus packed with sterile gauze. He has used the curette in four cases, but in all these, salpingitis resulted, which caused him to discontinue its use. He objects to the use of caustics for the same reason.

"The American Text-Book of Gynæcology" advises irrigation of the uterus and dressing with gauze. If peritonitis or salpingitis occur, it states that curettage is necessary.

Reamy advises the use of the sharp curette.

I believe that in cases where the amount of discharge is slight, intra-uterine treatment is not advisable, because of the danger of producing a mixed infection which increases the risk of the occurrence of salpingitis and peritonitis, as it is probably a demonstrated fact that gonorrhœal inflammation has but little, if any, tendency to cause suppuration.

3. *Chronic Catarrhal Endometritis.*—It may be said that this term

is a misnomer; that inflammation cannot occur without the presence of bacteria; and that, as Boulanger says, "All or nearly all cases of endometritis are caused by a microbe." We are, however, forced to use this nomenclature, since at present there is no other name to take its place. Pozzi suggests that it be considered a clinical and not a pathological term.

The treatment will vary in accordance with the cause, whether constitutional, symptomatic of some pelvic disease, or local. Some of the constitutional disturbances which may require treatment are: anæmia, faulty elimination such as renal insufficiency as Dr. Etheridge has described, constipation, and conditions which tend to keep the pelvic organs congested, such as improper dress, occupations which require much standing, and affections which cause a sluggish circulation.

Any pelvic diseases which interfere with uterine circulation, such as uterine displacement, pelvic inflammation outside the uterus, and pelvic neoplasms will require appropriate treatment. In all cases of catarrhal endometritis these conditions should be sought for, and, if found, should be treated before remedies are applied directly to the endometrium. This is especially true when this symptom affects the unmarried woman.

By local treatment is meant the direct application of remedies to the endometrium. Schultze advises dilatation of the cervix with laminaria tents, and frequent copious intra-uterine irrigation of one to fifty carbolic acid solution.

Pozzi thinks this kind of treatment suitable for mild but not for severe cases.

The "American Text-Book of Gynæcology" objects to the use of caustics because sloughs occur, and thus the endometrium becomes suppurative, and peritonitis and salpingitis may result.

Reamy believes that when constitutional remedies fail to effect a cure, the curette should be used.

Skutsch advises the daily use of irrigations of a three per cent. solution of bicarbonate of soda to dissolve the mucus, followed by irrigations with carbolic acid, bichloride of mercury or lysol, but believes that washing out of the secretion is the more important part of the treatment.

Von Winckel recommends for mild cases irrigation with the soda solution, followed by applications of liquor of sesqui-chloride of iron. In the obstinate cases he advocates free dilatation, curet-

tage without irrigation, dry mopping of the uterus with cotton, and application of the iron solution.

Skene employs, usually without dilating, a few drops of mild antiseptic and astringent solution injected with a pipette, and objects to irrigation, injection, mopping and the use of tents. Where hypertrophy of the mucous membrane exists, he employs the curette.

Thomas depends on constitutional remedies, applies no medicines above the internal os, and recommends the use of the dull wire curette to remove fungous growths.

Mundé dilates, uses the dull curette and cauterizes with chloride of zinc. He objects to injection and irrigation because he considers them dangerous, and depends on applications with swabs.

This diversity of opinions and methods of treatment of authorities seems to indicate that the so-called office treatment of catarrhal endometritis is not especially effective.

My experience with injections, irrigations and swabs in the treatment of catarrhal endometritis has been limited ; I have not used them systematically, and the results have been unsatisfactory. When glandular hypertrophy exists, the use of thorough curettage, irrigation and drainage is the quickest, safest and most effective means of treatment.

4. *Chronic Septic Endometritis.*—The prophylactic treatment of chronic septic endometritis has not received the attention in the literature which its importance deserves. Many cases of this affection result from puerperal infection and can probably be prevented by appropriate treatment. In treating puerperal cases, the advisability of intra-uterine treatment should be considered, not only as regards the saving of life, but also as regards the remote health of the patient. As many cases of puerperal endometritis will result in chronic septic endometritis if appropriate intra-uterine treatment is not employed, these cases should invariably be submitted to thorough exploration of the uterine cavity for remnants of decidual or placental tissue and treated according to indications.

If it were possible to stop the careless and useless employment of the uterine sound, as frequently practised, the number of cases of chronic septic endometritis would be greatly diminished.

The pathological anatomy of chronic septic endometritis is such as to make it obvious that treatment by injections, irrigations, and swabs can be of little or no service, and, therefore, these methods of treatment need not be considered.

The enthusiastic advocates of electro-therapeutics seem to believe that nearly all cases can be cured by this means, but others, after a thorough trial, have abandoned the use of this remedy.

The "American Text-Book of Gynæcology" states that currents too weak to destroy bacteria cause death of tissue, inhibit the action of leucocytes and cell-proliferation and thus deprive nature of its power of combating disease and of repairing lesions.

Fehling, Ahfeld, Schwartz, Jackson, Outerbridge, and Newman have advocated the use of glass, hard rubber or metal intra-uterine drains. These appliances do not give sufficient space to permit free escape of the muco-purulent discharge. Pozzi believes that foreign bodies, aside from gauze in the uterus, tend to aggravate the inflammation.

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The rational treatment of chronic septic endometritis, based upon the pathology, is to remove the suppurating mucous membrane as completely as is consistent to render the uterine cavity as aseptic as possible, and if necessary, to establish drainage. The depth of the utricular glands is so great and their calibre is so small that it is imperative to remove them before cure can be effected. To use caustics of sufficient strength to destroy the hypertrophied tissue and to kill the bacteria, is probably certain to prevent perfect regeneration of the endometrium.

The belief is almost universal that the curette is the best agent for the removal of the suppurating membrane in chronic septic endometritis. Observations have been made which show that the endometrium is perfectly regenerated after curettage, and that the time necessary for the accomplishment of this regeneration is about two months.

A. Martin believes that curettage can be more thoroughly done with the blunt than with the sharp instrument. Thomas prefers the blunt wire curette. In the hands of an experienced operator, the general opinion is in favor of the sharp wire or spoon curette, notwithstanding the opinions of Thomas and Martin. The dull curette is the safer instrument for the inexperienced operator.

Curettage can be thoroughly done only with free dilatation and under narcosis. The technique of curettage has been so frequently and so well described that it is not necessary to give it in detail. I desire, however, to emphasize the necessity of using a cervical speculum in order to thoroughly pack the uterine cavity, and not simply plug the cervical canal.

After curetting, a mild caustic or active antiseptic should be

used, because it is impossible to remove all the mucous membrane with the curette. Any one who believes that this is possible would be convinced of his error if he would curette a uterus, and then remove the uterus and examine its cavity.

After curettage, Dr. Henrotin advises the use of peroxide of hydrogen. This would seem to be an effective remedy. Carbolic acid, tincture of iodine and bichloride of mercury are also valuable remedies for the eradication of the disease in portions of membrane not removed by the curette, and for the disinfection of the uterine cavity. Bichloride of mercury may also be employed for irrigation as has been frequently recommended. Iodoform or other antiseptic gauze packing may be used on account of its medicinal action on the walls of the uterine cavity. A gauze drain will probably never do harm and may do much good. If, however, the cervix was patulous prior to the dilatation, and if the position of the uterus favors drainage, it may be dispensed with.

How long should the gauze packing be allowed to remain? This should depend upon the condition of the surface of the cavity. If it be perfectly aseptic when the gauze is inserted, as it probably never is, the packing may be left one week or more as has been recommended. Otherwise, if it is left more than two or three days, secretions which form on the surface of the gauze may decompose and reinfect the uterus. I am, therefore, of the opinion that gauze should never be left in the uterus more than two or three days without renewal.

The after treatment of curettage probably does not receive, as a rule, the attention which is its due. If the uterus does not act as an automatic drain, the gauze packing should be continued as long as the discharge persists, and should be renewed often enough to prevent decomposition. If there is a discharge of pus, antiseptic intra-uterine irrigation should be continued daily until the discharge ceases. If a muco-purulent discharge recurs to any extent, a second curettage is probably imperative in order to effect a cure.

5. *Chronic Gonorrhœal Endometritis.*—The prophylactic treatment was considered under the head of acute gonorrhœal endometritis and so needs no further mention. The infection is usually mixed and is, therefore, to be treated according to the principles laid down in the treatment of chronic septic endometritis.

93 East Eighteenth Street.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, November 20, 1896.

The *President*, ADDISON H. FOSTER, M.D., in the Chair.

Calcified Uterine Fibroid.

Dr. M. L. HARRIS: The patient from whom this specimen was obtained was seventy years of age. When about forty years of age she noticed a tumor in the abdomen, which gradually enlarged for a period of six years, during which time she had irregular and excessive menstruation. At the end of this time—that is, when she was forty-six years of age, the menopause occurred. Then the tumor was very large and filled the entire lower part of the abdomen. After the menopause the tumor gradually became smaller and for a period of over twenty years gave her no trouble whatever. A year ago she began to have pains with increasing constipation. These pains increased in severity and became so acute as to require constant administration of anodynes. The constipation became very obstinate, requiring cathartics and injections of the severest type to effect evacuation of the bowels. This was the condition when I saw her about ten days ago. Upon making an examination the tumor could be easily felt attached to the uterus. It was freely movable, and from the fact that it had existed for so many years without giving trouble I reluctantly attributed the constipation to the tumor and tried to dissuade her from an operation. She had suffered so much, however, that she had her mind made up to have an operation performed. Her suffering was so intense that she said she would rather die than live any longer. I finally concluded to operate. On opening the abdomen the tumor was found springing from the fundus of the uterus. This little denuded spot here (illustrating) is where the tumor was attached to the uterus. These spots on the posterior surface of the tumor are where two loops of the ileum were attached. The two loops were drawn into the pelvis, so that they were sharply flexed. The explanation which I made of the trouble was that so long as this tumor was large and outside of the pelvis, in the abdominal cavity, it gave no trouble, but as it became smaller and smaller and increased in specific gravity, as you will see by becoming

calcified, it dropped in the pelvis and the trouble began. In dropping down it pulled the two loops of the ileum with it so that they were sharply flexed and caused intestinal obstruction. The tumor was removed with the greatest ease; in fact, after detaching the intestines I simply picked it off. There was no circulation to it, and it left on the fundus of the uterus the slightest incrustation of calcified matter, which with the finger-nail was scraped off with the loss of scarcely a drop of blood. The operation required but a few minutes, consequently there was no shock. The patient rallied from the operation which scarcely affected the pulse in any way. She did nicely for twenty-four hours. On the second day after the operation I received a letter from the attending physician saying that the patient had done well for this length of time. The next day he received a telephone message to come immediately and on his arrival found the patient had suddenly become comatose, with stertorous breathing, and died. The pulse was strong and full and kept so up to the time of death.

DISCUSSION.

Dr. NEWMAN: What is your theory in regard to the cause of death?

Dr. HARRIS: I do not know. I wrote the attending physician for full information in regard to it, but I have not heard from him since. He said that the patient did well for the first twenty-four hours.

Dr. HENROTIN: How old did you say the patient was?

Dr. HARRIS: Seventy years of age.

Dr. WATKINS: What was the condition of the kidneys?

Dr. HARRIS: The urine was examined and the kidneys were apparently all right.

Dr. DUDLEY: I did not hear the report, but desire to make a remark on the specimen because it calls to mind very distinctly a case in which I removed a similar tumor. The tumor was a little larger than this. When I cut down and explored the body of the uterus I felt something hard underneath the subperitonæal structures of the uterus. As I examined it carefully I felt something else, something like a fœtal skull. I was afraid that the woman was pregnant and that I had the fœtal skull under my hand. The sutures and the fontanelles were very closely imitated. Dr. Gourlay, the family physician who was present, reported that he had been giving intra-uterine electricity for a number of months. The

condition was so deceptive that I cut into the uterus only with great trepidation and found a calcified tumor. It was only upon the attending physician's strong conviction of the impossibility of pregnancy that I dared go on with the operation.

Dr. HENROTIN: How old was the patient?

Dr. DUDLEY: About thirty-five years of age. The case occurred in the practice of Dr. Gourlay of Downers Grove.

Dr. HENROTIN: Have you ever come across such a case in old people?

Dr. DUDLEY: I have seen three or four cases. In one the tumor was all broken down and inside of the uterus only a fragmentary shell was left. In one case, referred to me by Dr. H. S. Davis, Jr., there was carcinoma uteri in addition to the calcified tumor.

Dr. HENRY P. NEWMAN: I had an instance lately of calcareous deposits resulting from trauma of uterine tissue. The patient had had both ovaries removed several years ago and was sent to me for the cure of extensive adhesions which resulted.

Upon opening the abdomen I found over the fundus and posterior surface of the uterus numerous calcareous deposits corresponding to the bite of volsellum forceps, and to such an extent as to require use of a curette for their removal.

I refer to this in connection with the above specimen to illustrate how slight trauma of uterine tissue may produce calcareous deposits.

Cystic Tumor.

Dr. J. T. BINKLEY, JR.: The photographs which I exhibit are of a colored woman upon whom I, with the assistance of Dr. Watkins, operated about two years ago. This case is none the less interesting because of the delay. I show the pictures because of the enormous size of the tumor. The fluid in the tumor weighed one hundred and seventy-five pounds, and the solid portion of the tumor weighed fifty pounds. The weight of the patient before operation was three hundred and ninety-six pounds. The case terminated fatally, I believe, because of the too rapid delivery of the fluid.

The tumor was very heavy, thick-walled, with numerous adhesions, which were separated without great difficulty. The patient's heart was noticeably affected whenever traction was made upon the tumor. This, I think, was reflex irritation of the pneumogastric by tension upon the mesentery and stomach.

I recall a case nearly as large in the practice of Dr. Byford, in which I assisted, some four years ago, in which numerous vessels, some as large as one's finger, were ligated. Secondary hæmorrhage made it necessary for the abdomen to be opened a few

FIG. 1.—Cystic Tumor (Side View).

hours after the first very prolonged operation, which Dr. Byford did almost unassisted, locating and tying some bleeding vessels directly below the stomach.

This remarkable case, strange to say, made a perfect recovery.

Fibroid of the Uterus following Double Salpingo-Oöphorectomy.

Dr. BINKLEY: I also present photographs showing a fibroid development in the horn of the uterus following a double salpingo-oöphorectomy. The ovariotomy was performed by Dr. Byford

FIG. 2.—Cystic Tumor (Front View).

some three years ago. The uterus was recently removed at the Chicago Hospital.

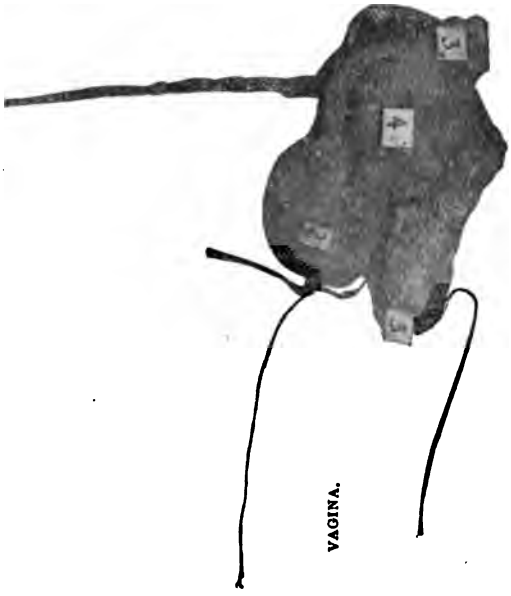
I have no plate showing a section of this tumor, but it was found to have entirely enveloped the ligature of the right horn, from which this fibroid developed.

DISCUSSION.

Dr. T. J. WATKINS: Dr. Binkley may remember that whenever traction was made upon the tumor under discussion the patient's heart was invariably affected.

FIG. 3.—Cystic Tumor (Patient in Bent Posture).

About four weeks ago I operated upon a women who had a tumor weighing seventy pounds with universal adhesions. The interne, who was giving the anæsthetic, stated that at times the pulse became imperceptible, and this condition was synchronous with traction on the mesentery. It is quite probable traction on



Fibroid of the Uterus following Double Salpingo-Oöphorectomy. (See page 57.)

FIG. 1.—(2) Tumor in Douglas' Pouch; (3) the opposite stump; (4) the fundus; (5) the cervix.

Fibroid of the Uterus following Double Salpingo-Oöphorectomy. (See page 57.)

FIG. 2.—Anterior view of uterus; (6) ligature on left side; (8) tumor at the right horn.

the mesentery was the cause of the depressed heart action in these two instances.

Dr. J. A. LYONS: Mr. President, I wish to say but a word or two in regard to the large tumor removed by Dr. Binkley.

I had the pleasure of being present during the very formidable

operation, noting the condition of the pulse throughout its entire progress, so that I can readily recall the peculiar heart action alluded to by Dr. Watkins. However, I did not particularly notice that it was synchronous with tension upon the mesentery.

In contradistinction, therefore, to the idea presented by Dr. Watkins. I should rather incline to believe that the action of the patient's heart was due to the sudden change in the blood supply, a great number of the abdominal vessels being unavoidably allowed to bleed during the hasty removal of the excessively large tumor, hence the return circulation was unsteady and inefficient, so that an irregular heart action, followed later by entire collapse in diastole, was a natural result in an otherwise weakened and shocked condition.

Dr. FERNAND HENROTIN: I would make the one remark relative to the statement frequently made that after removal of the ovaries and tubes shrinking of the uterus occurs. This is apropos, because we have here a specimen in which a fibroid developed after pressure made around the stump. It reminds me strongly of a case I operated on seven or eight months ago, where I had removed diseased ovaries and tubes very carefully and closely to the uterus some twenty-two months before. At that time the uterus was small, atrophied, and rather undeveloped. It was in a young woman. The body of the uterus was not larger than two small thumbs. The patient was ill, complained of menorrhagia and other symptoms. In the second laparotomy, I incised through the old scar later, and found the uterus about four times larger than it was at the first operation. It was a perfect specimen of a fibroid of the uterus, which developed in the body of the organ. These remarks are simply offered as a refutation of the claim frequently made that the uterus atrophies after removal of the appendages. It is furthermore an argument in favor of removal of the uterus when we have occasion to remove both tubes and ovaries, unless there is some contraindication.

Dr. HENRY T. BYFORD: I believe with Dr. Henrotin that when the ovaries and tubes are excised we should, if possible, remove the uterus. The effect of the ligation upon the uterine circulation is temporary, and an endometritis may counteract, to a great extent, the beneficial influence of the artificial menopause which results. Permanent ligatures, such as silk ones, should not be left in the abdominal cavity, as they are likely to produce irritation, as is proven by the case mentioned by Dr. Binkley.

Dr. BINKLEY: I would like to ask Dr. Byford if he uses catgut in tying off the broad ligament?

Dr. BYFORD: I use nothing but catgut.

Dr. BINKLEY: Do you tie it off *en masse?*

Dr. BYFORD: I first tie the ovarian arteries with a little of the broad ligament, then I tie the uterine arteries, and then with a third ligature I take in the whole ligament.

Diffuse Peritonitis.

Dr. BINKLEY: I wish to briefly report a case of diffuse peritonitis which is of great interest. Dr. McArthur and I operated night before last at six o'clock. The patient was a young woman twenty-four years old, and was brought into the hospital day before yesterday at noon. She had every symptom of appendicitis. She was perfectly well until Monday noon, when temperature developed with general abdominal pain, decidedly marked at the centre of the abdomen. She was sick all Monday night and vomited frequently on Tuesday. Wednesday morning Dr. Yount brought her to me. She was in great pain. Dr. Steele and I examined her, and found that there was more tenderness on the right side than on the left. She had that peculiar facial expression which attends general peritonitis—open mouth, lips drawn back, breathing rapid, and her temperature was 101°. Dr. Steele and I thought we would watch her a few hours, and endeavor to get an action of the bowels. We succeeded, with small doses of calomel given every thirty minutes, until a grain and a half had been given, in effecting one or two slight movements of the bowels. Considerable flatus was also expelled.

The symptoms became very much worse, and I determined to operate. I wanted counsel, and Dr. McArthur came at six o'clock. Everything was ready to take the patient immediately to the operating-room. As soon as the patient was anæsthetized I made a vaginal examination. Slight pathology could be found along the uterine appendages on either side. The patient presented every appearance of diffuse peritonitis, and we thought it was due to appendicitis. We could not be certain, however, and decided to compromise upon the line of incision. This was made just to the right of the left rectus. A free incision was made, and pus escaped immediately. The entire abdominal cavity was plastered with lymph, and the bowels were very much congested.

Our first procedure was to feel for the appendix, which we

found absolutely normal. We next examined the pelvic organs, and found the tube very highly congested, and slightly enlarged. I could not, however, press out any pus from the fimbriæ. In fact, the tubes did not appear sufficiently diseased to account for her condition. We therefore carefully delivered and examined all of the intestines which could be brought out of the cavity. As we ascended toward the diaphragm, the intestines and peritonæum appeared more normal. We therefore believed that while the tubes gave but little evidence of disease, the origin of the trouble must have been in them. The abdominal cavity was thoroughly washed out with hot normal salt solution, at 110° F. The intestines were also thoroughly washed, and kept protected with hot towels wrung out of normal salt solution. A large rubber drainage tube was inserted through Douglas' *cul-de-sac*, and a large Mikulicz's drain was placed in the pelvis. At the conclusion of the operation those present thought the patient would die in from one to three hours.

I am happy to say to you that now, at the end of two days, the patient is improving.

Dr. NEWMAN: What was the pulse prior to the operation?

Dr. BINKLEY: It was 110°. When I telephoned Dr. McArthur that I had to deal with a case of diffuse peritonitis, with pulse of 110°, he replied, "Very improbable. I do not believe it is diffuse peritonitis." Upon his arrival, he very quickly verified the diagnosis, which the operation proved beyond a doubt.

Dr. NEWMAN: In any previous case do you know of a pulse of 110°?

Dr. BINKLEY: No, I have known it to be 150 to 160. The pulse was certainly very misleading in this case. If this case recovers, my percentage of recoveries in diffuse peritonitis will be just fifty per cent. At the date of reviewing this paper, eleven days after the operation, the patient is eating and sleeping well—temperature normal. She will undoubtedly recover.

The following papers were then read:

Classification of Inflammation of the Uterus and its Relation to Circumuterine Inflammation.

BY E. C. DUDLEY, M.D.

(See page 19.)

A Basis for the Diagnosis of the so-called Inflammatory Diseases of the Uterus.

By C. S. Bacon, M.D.

(See page 30.)

The Prognosis of Inflammatory Conditions of the Uterus, Endometritis and Metritis.

By J. T. Binkley, Jr., M.D.

(See page 43.)

Treatment of Endometritis.

By T. J. Watkins, M.D.

(See page 45.)

On motion the discussion on these papers was postponed until the next meeting.

Official Transactions.

T. J. Watkins, *Editor of Society.*

THYROID AND OVARIAN THERAPY IN GYNÆCOLOGY.*

By Henry B. Stehman, M.D.,

One of the Gynæcologist to the Presbyterian Hospital, Chicago.

At the present time, the relation which subsists between special organs of the body and general nutrition is receiving unusual attention. As this subject becomes more fully understood it seems apparent that (Waller) the waste of one organ serves as raw material for another, and that this "interorganic" relation plays an important part in general metabolism.

How this influence is exerted we do not know. Some suppose that the secretion of these special organs affects nutrition by removing toxic substances which result from tissue change (Shafer). That, for example, one of the functions of the ovary is to eliminate organic toxins through the menstrual flow (Spillmann and Etienne); that the secretion of the thyroid favors uric acid excretion and thus increases nitrogenous denutrition (Irsai, Vos, and Gara); while others maintain that general nutrition of the body, and more especially the central nervous system, is affected by this glandular secretion entering the blood (Howell).

Whether the truth is found in one or both of these hypotheses it is difficult to determine, but we do know that these glands are so important to the general metabolism of the body that to remove some resuls in profound nutritive disturbances, while the removal of others is quickly followed by death of the individual.

By the side of these serious, indeed fatal, pathologic changes which follow the removal of these organs or glands, we have the most interesting fact that these morbid phenomena in a measure disappear after the ingestion of these substances. Landau states that ovarian tissue given after oöphorectomy seemed to him to modify the distressing nervous symptoms which usually follow this operation. In myxœdema, which is the invariable sequence of thyroidectomy, and which in women is accompanied by exhaustive menorrhagia, we find striking improvement following the exhibition of either thyroid substance or its extract.

But more than this, the pathologic disturbances which have fol-

* Read by invitation. For *Discussion*, see page 98.

lowed the removal of various glands have served not only to throw additional light on their physiologic importance, but these same morbid symptoms have suggested this fact, that when they appear in the course of any deranged condition of the body, they subside upon the ingestion of tissue from a gland similar to the one whose removal is followed by these same phenomena. We have learned that the ovary has not only an external secretion (ovulation) and is active in producing the menstrual function, but that, in addition, it possesses an internal secretion which, similar to the testicle, modifies nutrition (Spillmann and Etienne); that the internal secretion, elaborated by the thyroid gland, which even in the presence of mineral acids (Baumann) maintains its integrity, exerts a vaso-constrictor influence upon the circulation, and consequently can be utilized in those conditions which follow vaso-dilatation, as the following cases will show:

CASE I.—Mrs. A., aged forty-one. Widow.

Mother sickly for a period of ten years, before, during, and after menopause, owing to excessive metrorrhagia. First child born eighteen years ago; convalescence fair. Second child born two years later; health poor, patient suffering from great exhaustion. Six years later patient had a severe menorrhagia, confining her to bed for nine weeks; from that date to three years ago menstruation has continued excessive, obliging her to remain in bed three or four days each month. During six years of this period she received local treatment, which at times gave considerable relief.

Three months previous to October, 1893, there was a complete suppression of menstruation, which preceded an extensive discharge lasting for five weeks. Three weeks later hæmorrhage for eight days. Suppression for three months, which was again followed by a severe metrorrhagic discharge of seven weeks' duration, during which time she was repeatedly curetted. Three weeks later a recurrence, which lasted for eight days, being the same in quantity. Suppression for eight weeks, followed by a recurrence lasting twelve days. September, 1894, rest for six weeks, which was followed by a copious hæmorrhage lasting twelve days, and which was controlled by ergot. Up to February, 1895, menstruation regular, but excessive. A curetting in one of the hospitals in the city was performed about this time, which was followed by amenorrhœa for three months; this in turn was succeeded by a persistent hæmorrhage of three weeks' duration,

which almost cost her her life, and was only controlled by vigorous tamponade, hot douches, and internal medication. Three weeks later she returned to the hospital for curettage and repair of a cervical laceration, when she was again seized with a similar attack. She was informed that an abundance of intra-uterine polypi were removed, after which no menstrual flow appeared for nine weeks, which brings us to January, 1896. Up to March inclusive menstruation was regular as to time, but excessive in amount.

Curettage was performed in April, with a result similar as described before; two months elapsed again without any sign of menstruation. She came under our care July 29, when she had already been flowing for eleven days, and in spite of vigorous local and internal treatment, the flow did not fully cease until six days later. Previous to her admission her attending physician, as well as the consultants, advised hysterectomy as the only means of relief, and it was for this purpose that she was sent to me at the hospital. Examination revaled nothing special as regards the annexa, but the os was patulous, cervix soft, uterus large, admitting uterine probe a distance of four inches. The case was regarded simply as one of uterine hyperæmia dependent upon the menopause, and was so treated. Owing to the pronounced anæmia in consequence of the excessive loss of blood she was kept quiet in bed, but in spite of the ergot and astringents administered internally, three weeks after the cessation of the hæmorrhage she began to flow again, and although in the earliest stage uterine tamponade was resorted to, nine days elapsed before it entirely ceased.

September 3 we began the thyroid tablets three times a day, each tablet representing about one-sixth the size of a sheep's thyroid. Aside from a daily vaginal douche no other treatment was given; the latter part of the month patient menstruated for four and a half days, the quantity being normal in amount. The treatment was continued, patient being up and about all the time. Four weeks later menstruation was normal in quantity and amount. While there appeared no evidence of any disturbance due to the thyroid exhibition, we decided to lessen the quantity and also the frequency of the dose, giving the amount of one tablet daily. At the end of three weeks menstruation occurred again, the discharge being about the same as the previous two months. Another menstruation followed this, with same result.

CASE II.—Mrs. ——, aged twenty-seven.

Menstruated at eleven. Had always been painful, the pain being

such as would suggest obstructive dysmenorrhœa, the discharge invariably profuse. Married eleven years ago. Never pregnant. No history of specific vaginitis. Three years ago menstruation became more painful and more excessive and also irregular, occurring at intervals of one, two, or three weeks, and lasting from six to nine days, confining patient to bed.

First examination revealed pelvic viscera completely ankylosed in one indistinguishable mass. There was great tenderness in the region of the *cul-de-sac*, more upon the left than the right side, but the recognition of visceral outlines was impossible. She came to me with a diagnosis of uterine fibroma. Thyroid tablets were prescribed same as in previous case and continued during menstruation, which she reported was less in quantity than at any time during the past two years. The following month patient presented a still more favorable report, for the flow was not only less than the previous month, but pain was entirely absent. After two months' exhibition of the thyroid, a remarkable change has taken place in the pelvis. The uterus can easily be outlined, which by the pelvimeter measures four and one-half inches, and is readily moved, causing no pain. The right ovary hangs suspended somewhat below its normal position, whereas the left occupies the *cul-de-sac* to the left of the median line and is quite tender on pressure. Patient's general health considerably improved, with anæmia far less pronounced.

CASE III.—Mrs. ——, aged thirty-nine.

Married. Had several children and enjoyed very good health until after losing a three months' fœtus about a year and a half ago. After this accident convalescence was slow. Subinvolution of uterus was quite marked, which was further complicated by a very pronounced purulent endometritis. The size of the uterus was suggestive of myomatous degeneration; in fact, she was for two months under treatment for uterine fibroid. One year ago patient came under my care; thorough curettage was done and the endomentrium painted with fifty per cent. carbolic acid with alcohol. One month later high amputation of cervix was done after Schroeder's method. After this, patient improved in general health quite perceptibly, but in spite of internal use of syrup of calcium iodide, with intra-uterine alterative treatment persisted in for months, the uterus failed to diminish much in size. Menstruation was regular, but, as she said, always profuse.

After taking thyroid tablets for over three months, allowing an

interval of rest to intervene occasionally, the patient reports that her extreme nervousness has marvellously improved. She further states that during this period her menstruation has not only been less in quantity, but shorter in duration. During this time no subjective symptoms attributable to the treatment ever appeared. The uterus to-day is fully one-third less in size than it was at the beginning of the thyroid treatment, and this diminution began to be perceptible two months ago.

These cases, and others which I will not report, seem to me to present a strong presumption that the thyroid substance does inhibit the blood supply of the pelvic viscera. Moreover, it would appear that the continued exhibition of the gland caused such pronounced nutritive changes that not only do pathologic conditions disappear, but that even the habit of profuse menstruation, which seemed firmly established, yielded to its influence.

But, by the side of a therapy which would seem to inhibit the menstrual function, I desire to place another glandular substance which a limited experience from therapeutic observation, together with clinical facts, warrants at least a suspicion that deficient ovarian secretion may frequently account for amenorrhœa.

To the dual function of reproduction and the regulation of menstruation, we must concede to the ovary an additional function, viz., that of internal secretion. Moreover, it becomes a question whether the latter may not be a factor in menstruation—that is, whether the activity of the ovary may not be deficient and in consequence the nutrition of the central nervous system necessary to a healthy physiological performance of this act be lacking. It seems to me that what evidence we have points in that direction, and warrants us in the effort to improve nutrition by the administration of ovarian substance.

This hypothesis, furthermore, explains the nutritional changes which occur at puberty in the female; the phenomenal development of young pregnant women, and the general improvement in nutrition of the pregnant of any age. It explains why the nervous phenomena which are so distressing at the normal menopause, or when it is artificially induced, seem relieved upon the administration of this extract. Furthermore, it would appear that by increasing the quantity or possibly improving the quality of ovarian secretion by its internal administration as contained in ovarian structure, we supply that which is needful in healthy physiologic tissue change, to produce normal menstruation.

CASE I.—Miss ——, aged eighteen.

Menstruation began at thirteen; has been fairly regular until twelve months ago. During this last year she has had nothing but a slight vaginal discharge, no evidence of menstruation. She is fairly nourished, eats and sleeps well, but becomes easily exhausted upon the slightest exertion. Complains of continual headache. She has had no treatment. No evidence of any physiologic cause for the amenorrhœa.

For two weeks she received a general tonic; then one tablet of ovarian extract three times a day, the tonic being discontinued. Twenty-one days later she called at my office and stated that a bright menstrual discharge had appeared that morning, and I learned afterward that the flow continued for six days. Menstruation has appeared regularly since then.

CASE II.—Mrs. ——, aged thirty-seven.

Nutrition fair, exceedingly neurotic. Had one miscarriage, and later one child seventeen years ago, from which time she dates her suffering, such as pain in reagion of each ovary, backache, shooting pains in the limbs, etc. Local examination revealed all the symptoms which accompany endometritis.

The uterus was curetted and a lacerated cervix repaired. Following this treatment she improved somewhat, but the dysmenorrhœal pains still persisted, and as for the backache, she was never free from it. One ovarian tablet was prescribed t. i. d.; after one month she reported that she passed through her sick week with the greatest comfort. No pain of any kind; even the backache was gone. In addition to this, she insisted that her nervous symptoms had subsided in a great measure, and that she considered herself well. Upon further interrogation, I found that she suffered less from mental and physical fatigue than formerly, that her work was less tiresome, and that she seemed to be under the influence of a powerful muscular and nervous stimulant. These symptoms are strongly suggestive of those who follow the ingestion of testicular extract (Howell).

As additional evidence that the administration of ovarian tissue modifies ovarian nutrition, I would report the following case:

CASE III.—Mrs. ——, aged twenty-eight.

Married six years. Three years ago she aborted at three months' gestation. Since then she has not been well, suffering especially at her menstrual periods. This dysmenorrhœa was of the ovarian type. Local examination revealed a uterus that had

undergone hyperinvolution; the fundus seemed only half the size of that of a normal uterus, and the canal diminished fully one- third. The broad ligaments, ovaries and tubes normal so far as can be discerned by touch.

The administration of the ovarian tablets in this case relieved the ovarian pain entirely, but it appeared in the uterus. Previous to taking the tablets the uterus was entirely free from pain, but after the ovaries were relieved and uterus suffered. The pain was expulsive in character, and the discharge, while clotted, was quite profuse.

As to the therapeutic value of ovarian extract in the relief of those nervous phenomena which follow double oöphorectomy I cannot speak positively, because observations have not yet been made in a sufficient number of cases. Those cases which I have studied certainly suffered less distress than is usual, but whether this comparative freedom from the hot and cold flashes was due to the extract it were better to leave more extensive clinical facts to decide.

In those cases of neurasthenia, with poor nutrition, and in consequence disordered pelvic function, ovarian tissue is truly indicated. The extract not only modifies the nutrition of the ovary, but also general nutrition, and this return to the normal makes physiologic process possible.

I have also noticed that some of the patients who were taking the thyroid extract suffered more pain in the mammary glands previous to menstruation than they did previously. This observation is in accord with the investigations of Hertoghe, who found that thyroid juice administered to animals increased the quantity without affecting the quality of milk. He also found that in nursing women, with diminution of lacteal secretion synchronous with the appearance of menstruation, after administering the extract the glandular secretion was restored.

The foregoing facts suggest an intimate nutritive relation between the pelvic generative organs and the thyroid, and show that the ovary, too, shares in some mysterious manner in the processes of general metabolism.

To what extent these structures may be used in therapeutics will depend, for the most, upon our comprehension of the physiologic relation. At any rate, any line of study which will throw light on this subject is directly in line with rational medicine.

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THE PATHOLOGY OF UNINTENTIONAL ABORTION.*

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Abortion may be a symptom of a vast number of diseases, and as a diagnosis it can be classed with such terms as amenorrhœa, dysmenorrhœa, leucorrhœa, and a multitude of traditional symptomatic diagnoses, which originated when gynæcological pathology was in its infancy. It may deserve somewhat more to be considered a proper diagnosis on account of its immediate and remote importance to the health of the mother and on account of the special treatment it requires, which, to a certain extent, will be the same for all cases; but the time is certainly at hand, when we should consider it our duty in each case to endeavor to discover the disease which has caused the abortion, and of which the abortion is a symptom.

The pathology which causes abortion may be found (1) in the ovum, (2) in the mother, or (3) in the father.

1. *The ovum.*—The pathological lesion may be in the fœtus, in the umbilical cord, or in the fœtal membranes.

In the fœtus.—The fœtal mortality is supposed to exceed that of any other period of life. The disease most frequently fatal to the fœtus is *syphilis.* Ruge has estimated that eighty-three per cent. of premature labors and still-births are due to syphilis. Of six hundred and fifty-seven pregnancies in syphilitic women, as collected by Charpentier, thirty-five per cent. terminated in abortion, and of the children that went to term a large number were still-born.

Manifestations of syphilis during fœtal life may assume the greatest variety. Some of the more common forms are: Osteochronditis, with occasional separation of the epiphyses of the long bones, excessive growth of connective tissue in the walls of the blood-vessels, in the liver, spleen, kidneys, brain and other organs, nodes in the lungs or bronchial glands, localized suppurations in the thymus and lungs, peritonitis, as well as eruptions on the skin and affections of the mucous membranes.

*Read by invitation. For *Discussion*, see page 93.

The result of fœtal syphilis is not often abortion, more frequently miscarriage and premature labor.

Some infectious diseases may be transmitted from the mother to the fœtus, and may be very disastrous in their effects upon the fœtus. *Typhoid fever* in the pregnant woman in about sixty-five per cent. of the cases results in interruption of the pregnancy. Neuhaus found the specific bacilli in the lungs, spleen and kidneys of a fœtus expelled at the fourth month from a woman who was convalescing from a prolonged attack of typhoid fever In other cases the death of the fœtus has been attributed to asphyxia as the result of alteration of the blood and elevation of the temperature.

Of thirty-four cases of *malaria* in pregnant women, observed by Negri, eighteen per cent. terminated in premature expulsion of the fœtus. Symptoms of disturbance in the unborn fœtus at regular intervals, corresponding or not to the malarial paroxysms in the mother, have been observed, and interpreted as manifestations of malarial poisoning of the fœtus. Observations have also been reported of symptoms of periodical seizures in the new-born baby, beginning immerdiately after birth, and fœtus has been born with distinct malarial enlargement of the spleen. Aside from this direct action, malaria in the mother seems to have a deleterious influence on the growth and development of the fœtus.

In cholera early abortion is the rule; and if the child should be born at or near term, it dies in a few days. Tarnier, however, says that there is nothing to justify the belief that cholera directly affects the fœtus.

When the mother is attacked with *confluent smallpox*, she almost always aborts, but not necessarily when it is discreet or modified. (Playfair.)

Tuberculosis and yellow fever may also cause the death of the fœtus, as may also occasionally, but more rarely, *measles*, *scarlatina*, *erysipelas*, *septicæmia*, *articular rheumatism*, and *recurrent fever*.

Of non-infectious diseases that may cause the death of the fœtus may be mentioned *lead poisoning*. Mr. Paul has collected (*Arch. Gen. de Méd.*, 1860) eighty-one cases in which it caused the death of the fœtus, in some not until after birth. It seems to have affected the fœtus occasionally even when the mother developed no symptoms. *Peritonitis and pleurisy* may be disastrous to the fœtus. *General anasarca* of the fœtus usually causes interruption of the pregnancy from the fourth to the eighth month. *Rachitis* may also

be mentioned as a cause. *Traumatism* may injure the fœtus through accidents to the mothers, and may cause fractures of bones, especially of the skull, and internal injuries. *Perforating wounds* of the abdomen of the mother may affect the fœtus. When the condition of pregnancy is overlooked or mistaken for some pathological condition, injuries to the fœtus may result from instruments in the hands of the physician introduced through the uterine canal, or through the walls of the uterus.

The umbilical cord.—Exaggerated torsion of the cord has been observed and regarded as a cause of fœtal death, but most modern observers consider it a post-mortem occurrence. *Stenosis of the umbilical vessels,* caused by excessive development of connective tissue in the walls of the same, may be found, and is usually attributed to syphilis. The development may be so enormous through the entire walls of the arteries, that it is impossible to distinguish the different coats. The affection of the vein may cause immense dilatation of healthy portions, and may occasionally end in rupture and extravasation of blood; or the impediment to the flow of blood from the placenta may cause œdema of this organ and hydramnion. In addition to the thickened walls we may find the whole substance of the cord infiltrated with granulation cells still further obliterating the lumina of the vessels. *Periphlebitis* may also diminish, but not seriously, the calibre of the vein. The arteries are occasionally obstructed by *atheromata* and *thrombosis.* Pinaud has seen the vessels of the cord obstructed by an over-development of the valves. A true knot of the cord may, although rarely, be drawn so tight as to shut off the placental blood supply. *Coiling of the cord around the fœtus* has occasionally caused death.

The Amnion.

Hydramnion.—The ætiology of this condition is not sufficiently well known, but it can probably in most cases be attributed to some impediment to the circulation of the fœtus, the umbilical cord or placenta. The fœtus is very often found dead and shrivelled; the death of the fœtus and the hydramnion could probably generally be traced to the same ætiology. Premature expulsion of the fœtus often supervenes, and it does not seem entirely impossible that this condition, as well as *oligo-hydramnios* and *amnionitis* occurring early in pregnancy may occasionally cause abortion.

The Chorion.

In the *chorion* we may find *cystic degeneration of the villi,* charac-

terized by hypertrophy and cysts of the villi. The cysts may vary in size from a millet seed to a grape, or exceptionally even to a hen's egg, connected with one another, and with the base of the chorion by pedicles of varying sizes. The general involvement of the whole chorion is the rule, but exceptionally the placenta alone is affected. Still more rarely the disease is found in isolated spots upon the chorion læve. The change consists in an overproduction of true mucous tissue within the villi. The affection is limited to the endochorion, and constitutes a true myoma of the chorion. (Virchow.) The expulsion of the ovum generally takes place between the third and six months of pregnancy, and its size is considerably larger than a normal ovum at the same term. Upon incision of the decidua innumerable small systs are visible. Within the centre of the vesicular mass is usually found a shrivelled or distorted fœtus, surrounded by its amnion, which occasionally contains an abnormal quantity of fluid.

Occasionally no trace of an embryo is found, or only the remnants of an umbilical cord remain. The enlarged villi have a tendency to perforate either one or both deciduæ, and even encroach upon the muscular wall of the uterus.

Microscopically, the outer cellular and the inner fibrous wall of the villi will be seen, while in the interior will be stellate connective tissue cells in the interstices between which may be found mucous tissue. Disease of the endometrium or of the uterine walls (fibroid tumor) and stenosis of the umbilical vein have been found in connection with, and probably in ætiological relation to, cystic degeneration of the chorionic villi, which also has been attributed to death of the fœtus or to absence of the allantois.

The Placenta.

ANOMALIES OF POSITION.

Placenta prævia.—Playfair says: "It is far from unlikely that such an abnormal situation of the placenta may produce abortion in the earlier months, the site of its attachment passing unobserved." And Lusk states that: "It may occasion abortion, which is then characterized by the absence of pain, both previous to the hæmorrhage and during the period of expulsion. As a rule the ovum is expelled entire, without rupture of the membranes."

Anomalies of size.—Abnormal thickness of the placenta is generally due to irritation from a chronically inflamed endometrium,

resulting in hyperplasia, and it may produce hydramnion. An abnormally small placenta may be associated with an ill-developed child, or may depend upon an interstitial overgrowth with subsequent retraction.

DISEASES OF THE PLACENTA.

Œdema is generally caused by obstruction of the umbilical vein or of the veins of the fœtus.

DEGENERATION OF THE PLACENTAL VILLI.

Cellular hypertrophy, which means extensive multiplication of the cellular elements in the villi, may obliterate blood-vessels and give the placenta a hard, dense appearance (sclerosis), as is seen in syphilitic disease of the villi.

Fibrous and fatty degeneration of the placenta is extremely common. Isolated examples are found in almost every placenta. An abnormal development of fibrous tissue, which might be termed interstitial placentitis, may originate either in the decidua serotina, the placental villi, or the intervillous spaces. When the disease affects the decidua serotina, it is associated with chronic inflammation of the remainder of the endometrium (interstitial endometritis). The placenta becomes secondarily involved, and the hypertrophied decidua encroaches upon the intervillous spaces. When it affects the placental villi, the mucous tissue in the interior of the villi becomes converted into fibrous tissue, the blood-vessels become obliterated and atrophied, and the villi become more or less infiltrated with fat. If the process extends, the functions of the placenta are naturally abrogated. When it affects the intervillous spaces, the result is a sort of hepatization. The result of fibrous degeneration of the placenta, wherever the disease originates, prevents the performance of its most important vital functions, and if the pathological condition involves a large area of the organ, it must prove destructive to the fœtus. The deprivation of the blood supply determines the fatty degeneration, or in some cases amyloid degeneration, of the placental villi.

Placental syphilis may assume many different forms.

Granulation-cell infiltration of the villi and degeneration of their epithelial covering with consequent increase in size and distorted shapes are, according to Fraenkel, characteristic of syphilis, and will constantly be present if the placenta is diseased after infection of the ovum by the impregnating spermatozoa.

If the mother is infected during the fruitful coitus, there may be *endometritis placentaris*, characterized by enormous overgrowth of decidual cells or overgrowth of connective tissue as well as syphilitic disease of the villi.

Endometritis placentaris gummosa is generally the form assumed if the mother was syphilitic before conception. Then the decidual cells are enormously increased and overgrown, encroach deeply upon the intervillous spaces, and undergo in places caseous degeneration.

Fibrous nodes in the fœtal portion of the placenta may be of a syphilitic nature.

Macroscopic appearance.—If the child has been dead some time, the placenta may be almost white in appearance and soft and greasy to touch. Very often there are organized clots, showing previous hæmorrhages or thrombosis. Or there may be found nodes of a greater or less extent undergoing degenerative changes.

Consequences.—The cellular infiltration of the villi results in the obliteration of the blood-vessels. The same effect may be produced by hyperplasia of the decidua serotina. Or the destruction of the villi may be brought about by the formation of the nodular masses. All of these processes, if they invade, as a rule, the whole area of the placenta, must of necessity be fatal to the fœtus.

Placental hæmorrhages may result in immediate abortion, and then a fresh clot of blood, sometimes occupying a very large area, will be found. If abortion is not the immediate result of the hæmorrhage, the coagula will undergo the usual changes, will become encapsulated and surrounded by a fibrous wall of varying thickness, within which may be found a reddish or brownish fluid, or the cyst may contain nothing but clear serum, while the coloring matter of the blood is deposited upon the cyst-wall or upon the surrounding villi; or it may contain large numbers of white blood corpuscles undergoing fatty degeneration and giving rise to a liquid resembling pus. Again, the fibrin may predominate and form a mass consisting of laminated fibrin, or the clot may form a distinct neoplasm. The placental villi surrounding the extravasated blood usually undergo a fibro-fatty degeneration.

Predisposing causes are: Congestion, albuminuria, diseased condition of the placental villi, slow-moving blood current in the placental sinuses, and excess of fibrin in the blood.

The determining causes may be: Sudden powerful action of the heart, syncope (favors thrombosis), or external violence. In the

early months apoplexy is more common; in the later months, thrombosis.

The consequences depend upon the amount of blood extravasated. Should the quantity be large, either the number of villi strangulated by the clot is so great that the fœtus is at once asphyxiated, or the escaping blood, especially in the earlier months, separates the placenta from the uterine wall with the same result.

Placental parasites.—Turner reports an epidemic of abortion on a stock-farm in Missouri, in which all pregnant mares aborted. The cause was found to be a parasitic disease of the placenta, and pure cultures of the microbes were obtained. Epidemics of abortion are also known to take place in cows.

In the mother the disease may be local or general.

Local Diseases.

Diseases of the decidua.—Acute inflammations occur especially in the course of the exanthematous diseases.

Exanthematous decidual endometritis.—Klotz reports eleven cases of measles in pregnant women, in nine of which there was premature expulsion of the fœtus. The uterine action is, according to Klotz, excited by the occurrence of an exanthema upon the uterine mucous membrane, highly irritating in its action. It is quite probable that the same condition of the uterine mucous membrane might account for abortions or premature labors that often occur, when pregnant women are attacked by any of the other eruptive fevers. Slavjansky in two cases of cholera found the decidua thickened and of a dark purplish hue, with numerous extravasations of blood throughout its substance (*hæmorrhagic decidual endometritis*). The chronic forms are more commonly met with, and are usually due to a pre-existing chronic endometritis.

Endometritis decidua chronica diffusa consists in extensive hyperplasia of the mucous membrane, and produces a membrane in thickness and density far in excess of the normal. There is great multiplication of the decidual cells, some of which are elongated and seem to be changing into connective tissue. The blood sinuses are much enlarged in the deeper portions of the membrane, and there is an abundance of connective tissue or an abundant exudation, which at first is simply amorphous or granular, but soon becomes fatty when formation of connective tissue does not take place. If the disease has a rapid course, abortion will usually result either on account of hæmorrhages into the mucous membrane,

separating it from the uterine wall, or on account of death of the embryo, from which all nourishment has been diverted to supply the greater needs of the rapidly growing decidua. In such cases the embryo may be absorbed and the deciduæ may afterward be cast off as an empty sac with greatly thickened walls, forming one variety of the so-called *fleshy moles.* Or the embryo may be destroyed in consequence of the hæmorrhage into the hypertrophied decidua, which may cause rupture of all of the membranes and escape of blood into the cavity of the ovum, as well as exteriorly into surrounding tissue, so that only with a microscope can one detect the true nature of the mass expelled. Owing to firm adhesions to the uterine wall, portions of the diseased membrane, especially the placental decidua, are apt to be retained, and endanger the health of the mother by hæmorrhages or infection.

In *endometritis decidua tuberosa et polyposa* the hyperplastic process seems to have been exaggerated in places. The whole membrane is greatly thickened and shows the same hyperplastic changes under the microscope as the former disease, but out from this stand smooth and very vascular projections of a tuberous or polypoid form, to the height of half an inch or more. In the spaces between the projections may be seen openings of the uterine glands, which are not to be found on the polypoid elevations. The polypoid proliferations consist of a strong fibrous stroma, with large lentil-shaped cells and without fatty degeneration. The arteries are surrounded in some places by thick concentric layers, while at other points the vessels are sinuous and dilated and form a wide-meshed framework. (Winckel.) In all the cases hitherto described the ovum has been expelled at the end of the second to the fourth month of pregnancy. (Schroeder.)

Catarrhal endometritis affects chiefly the glandular elements of the membrane, and results in hypersecretion of a thin watery mucus, that collects between the chorion and the decidua. This affection in the later months of pregnancy causes the familiar picture of hydrorrhœa gravidarum, and sometimes premature birth. It may reasonably be supposed to occasionally cause interruption of pregnancy in the earlier months.

Cystic endometritis is characterized by the formation of small vesicles varying in size from a pea to a hazelnut, which are filled with a clear fluid. It results when there is a hypersecretion of the uterine glands without escape of the secretion, and is a condition only found in very young ova.

I. Veit has called attention to a form of endometritis of the decidua characterized by foci of small cell infiltration, and claims that this is the most common form of decidual disease that may cause serious disturbances in pregnancy.

R. Emanuel has in Veit's private hospital observed two cases of abortion, in which the decidua vera macroscopically showed great thickness (5 to 8 mm.) and several foci of grayish-white or yellowish-white color. Microscopical examination of these foci showed great infiltration with small round cells in the form of infarcts, in which no decidual cells were visible. They also contained great numbers of cocci, in form and appearance diplococci. One of these observations was made in a case of myxoma chorii.

Emanuel had with Wittkowsky the opportunity of observing the other case in another abortion two and a half years later. The decidua vera was 2 cm. thick, brittle, and of an intense yellow color all over. Microscopically there was found infiltration with small round cells and numerous bacilli of great length, of which they obtained pure cultures, and which they and also Veit consider the ætiological factor.

Atrophy of the decidua is rare. The whole or part of the placenta may be affected. In case of atrophy of the ovular decidua, the ovum may rupture and its contents be discharged. When the placental decidua is affected a slender pedicle attachment of the ovum may be the result, allowing the same to enter the cervical canal, where it may be retained for a while, producing cervical pregnancy, until finally it is expelled. Microscopically, instead of the characteristic cellular forms, numerous round or oval nuclei or isolated cells containing droplets of fat are found. The juga and vollicula of the normally developed decidua are usually absent. Extravasations of blood in spots are very often present.

Chronic metritis may be found as a cause of abortion, either on account of the rigidity of the walls not allowing the ovum to expand, or by the congestion causing hæmorrhages, that may kill the fœtus or cause contraction.

Retro-displacements of the pregnant uterus frequently terminate in abortion (Martin, 15 cases out of 41; May, 33 out of 150; Howitz, 37 out of 52).

Less frequently *prolapsus uteri* (Litten, 16 cases out of 91; Krause, 2 out of 10), and rarely the other displacements may cause abortion.

Lacerations of the cervix uteri deserve an important place in the

pathology of abortions, as they are frequently observed in these cases.

Uterine fibroids often cause interruption of pregnancy. (West observed 28 abortions in 36 cases; Boehrig, 129 in 147 cases; Lefour, 39 in 227 cases.) Fibroids of the body more frequently cause abortion; fibroids of the cervix, premature labor.

The frequency of abortion in *cancer of the uterus* is stated at 13 per cent. *Tumors of the ovaries* not infrequently cause abortions. Of 215 cases collected by Zeller, 21 aborted; of 321 cases collected by Remy, 75 aborted. *Tumors due to former extra-uterine pregnancies.* Of 83 such cases collected by Schuhl, 13 terminated in abortion and 5 in premature labor.

Ulcerations of the collum, subinvolution, malformation of the uterus, peritonitic adhesions, chronic diseases of the appendages, may also occasionally cause abortion, as may also inflammation of adjacent organs, particularly of the bladder and rectum. *Exaggerated irritability, uterine rigidity or atony, laxity of the collum, molimina menstrualia, and too frequent coition,* have been classed as local causes.

General Diseases of the Mother.

Intoxications with lead, mercury, bisulphide of carbon and tobacco have been observed in factories as causes of abortion. *Alcoholism* predisposes to uterine hæmorrhages and abortion.

Maternal syphilis is by all authors considered the most influential factor toward interruption of pregnancy. When no affections of the uterus or its contents can be found, it is probably justifiable to assume that the impaired nutrition and the altered condition of the blood of the mother may be sufficient to destroy the fœtus.

Scrofula.—Bourgeois found that of 52 scrofulous women married to apparently healthy men, 12, or about 25 per cent., aborted. Lugal claims that abortion is almost inevitable if both parents are suffering from scrofula.

Intermittent fever often causes premature labor, but seldom causes abortion. Of 105 cases collected by Bonfils, 61 resulted in premature labor, 12 in abortion.

Nervous diseases, such as chorea, and convulsive diseases and *skin diseases,* such as pruritis vulvæ, may rarely cause abortion.

Diseases of the urinary system.—Albuminuria (with or without nephritis) is a frequent cause of interruption of the pregnancy. According to Braun abortion, miscarriage, or premature labor

take place in about 80 per cent. of all cases. The effect is generally the death of the fœtus, caused by the anæmia of the mother, intoxication of the system, or lesion of the placenta. *Urinary gravel.*—Abortion has sometimes been caused by the violent vomiting of renal colic. *Diabetes* may cause abortion (Duncan, 7 times in 19 pregnancies).

Diseases of the digestive organs.—Prolonged attacks of diarrhœa will generally cause abortion. Constipation and intestinal parasites are also considered possible causative factors.

Disease of the circulatory system.—Heart disease frequently causes abortion, according to Schuhl in 58.87 per cent. of the cases.

Varices of the lower extremities.—It is claimed that compression of these may cause uterine hæmorrhages. Hæmorrhoids or rectal fissure may exceptionally cause abortion as the result of irritation or abundant hæmorrhages. Anæmia may be a cause, and hæmophilia is supposed to cause abortion by too active circulation in the uterus.

Under diseases of the respiratory organs, pulmonary tuberculosis may be mentioned as a cause. Accidental causes may be traumata or mental emotions.

Under *general physiological and hygienic causes* may be mentioned sedentary habit, habit of abortion, temperament (if if it goes beyond the physiological limits, especially the plethoric, the lymphatic, and the nervous temperament), delicate constitution, age (too young or too old), hereditary, consanguineous, marriages, obesity, prolonged repose, insufficient alimentation, climate (changing from cold to hot), and high altitude.

Causes due to the Father.

Excessive coition on the part of the male has in animals been observed as a cause of abortion, and is supposed to cause alteration of the sperma.

Alcoholismus causes atrophy of the testicle, alterations of the tubulæ seminiferæ and of the sperma. It is therefore not astonishing that the alcoholism of the father seems to have a retentive influence upon the progress of pregnancy. (Goubert.)

Saturnismus.—Constantin Paul collected 32 cases, in which abortion resulted 11 times.

Syphilis.—Of 103 cases collected by Fournier, 41 resulted in abortion or premature labor with dead or dying children.

Scrofula.—Pulmonary tuberculosis, cancer, diathesis, albuminuria, age, and constitution may be causes.

THE MODUS OF ELIMINATON OF THE PRODUCT OF CONCEPTION

differs according to causes. 1. The entire ovum, together with the decidua vera and circumflexa, may be expelled even in the first months. 2. The ovum may tear off at the decidua serotina, and the decidua vera remain behind. 3. The decidua circumflexa may tear in the descent, and the ovum be born consisting of chorion, amnion, embryo and amniotic fluid only; then the decidua vera and circumflexa with serotina follow later. 4. The chorion tears in the descent of the membranes, and the amnion only passes through without injury, and the cord tears off at the placenta without rupture of the amnion or escape of the amniotic fluid; only after some time the detachment of the other membranes follows. In the first and second month the retention of the deciduous membranes takes place most commonly, because at this time the connection between the villi and the uterine wall is not as yet very intimate. The last-mentioned form of expulsion, in which the amnion only envelopes the fœtus, is the rarest of all, but may happen even in a fœtus of four or five months.

Finally, the decidua vera and circumflexa are not infrequently found torn off in a foetus of four to six months; the placenta fits like a cape over a part of the fœtus, and the amnion alone is discharged intact.

When the ovum is ruptured the fœtus may be expelled, and only the deciduæ, interspersed with effusions of blood, will remain behind; such ova have been termed "blood moles." If the entire ovum be not expelled, and portions of the deciduæ vera or placenta remain behind, the hæmorrhages continue sometimes, associated with uterine contractions. Fibrinous and so-called placental polypi are frequently formed from these remnants. They become coated over with the escaping blood and are rounded off. New fibrinous layers are constantly deposited upon them; the larger they become the more profuse will the metrorrhagia be, until they are detached and expelled by uterine contractions, or slough away.

A. Dührsen, according to his observations, considers the retention of parts of the decidua vera not the exception, but the rule, after abortions running a spontaneous course or treated by tamponade.

When expelled pieces of the placenta show a darker color and a firmer, harder tissue, the decidua vera is three to four times as thick as the decidua reflexa, and shows a much greater vascu-

larity. It has one smooth surface only perforated by the openings of the uterine glands, and one rough ragged surface covered with blood coagula. When the decidua reflexa remains in connection with the chorion, it passes away entire.

In regard to what part of the decidua vera is detached and what part remains, Schroeder thinks that the line of detachment runs through the cellular layer, leaving the entire glandular layer and a part of the cellular layer behind.

Langhaus states that at a normal labor the decidua is detached at the line between the cell and the ampullary layer, the ampullary layer remaining almost entire.

Leopold states that by abortions the decidua vera is detached in the ampullary layer.

A. Dührsen claims that the spontaneous loosening of the decidua vera takes place always in the glandular stratum, and especially in the deep alveolar layer. The curette detaches the decidua vera always in that same layer; it does not cause any deeper injury of the uterine walls.

In regard to the detachment and expulsion of the ovum, Dührsen says: "So long as the decidua vera and reflexa have not grown together, the labor pains will only loosen the placental attachment from the uterine wall. The ovisac passing downward will then mechanically tear the decidua vera loose from the uterine wall. But this process is incomplete, as adherent pieces of the decidua tear off and remain in the uterus. As long as the placenta is still adherent, one will never find even a small piece of decidua vera detached. It is impossible for labor pains primarily to detach the decidua vera, as it is gelatinous, and folds itself when the uterine wall contracts and gets shorter.

The mechanical detachment of the decidua vera is perhaps favored by extravasation of blood in the deepest strata of the glandular layer, but can also take place without these.

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622 NORTH HOYNE AVENUE.

ARTIFICIAL DILATATION OF THE PARTURIENT CANAL IN LABOR.*

BY JUNIUS C. HOAG, M.D.,

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In obstetric practice we are not infrequently confronted by certain disturbances in the course of labor which threaten the safety of mother or child, and these disturbances give us indications for certain operations. Such indications often present themselves before the parturient canal has been sufficiently dilated by the physiological processes of labor to enable us to safely proceed with our operative therapeusis. The indications for various operations may be identical, but each operation has its own peculiar conditions to be fulfilled. The condition that we are most likely to find unfulfilled is adequate dilatation of the lower uterine segment, the os, the vagina, and the introitus vaginæ. In this paper, accordingly, I wish to consider the artificial dilatation of these parts.

As indications for artificial dilatation of the cervix we have local inflammations which prevent or delay physiological dilatation, thus endangering the life of the mother or child. Among these inflammations are those of the cervix, produced by chronic blennorrhœa, caustic applications, syphilis, and carcinoma, which result in a hypertrophied condition of the tissues, whereby the normal processes of labor are so hampered as to greatly retard or even prevent natural expulsion of the fœtus. We also find cases,

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* Read by invitation. For *Discussion*, see page 98.

especially in primiparæ, when without the presence of any discoverable lesion we have an extremely tardy and painful dilatation of the os. In such cases labor may have progressed well for a time, and partial dilatation of the os may even have occurred. Then the cervix becomes rigid, labor fails to advance, and the patient becomes almost unmanageable by reason of her sufferings. Such interference with labor may be due to faulty presentation of the fœtus, whereby the bag of waters does not offer its usual shape; or upon some pelvic obstruction or lack of parallelism of the uterine axis with that of the pelvic brim; or the uterine contractions may become altered in character, assuming an irregular or even a clonic form.

The commoner forms of complicated labor which require us to expedite delivery are eclampsia, placenta prævia, accidental hæmorrhage, prolapse of the cord, septic infection, and cases of dead fœtus, including delayed abortion and finally retention of placenta or membranes. In some cases, too, artificial dilatation may be required to render possible the rectification of a faulty presentation or prophylactic version in a case of contracted pelvis. Artificial dilatation has also been performed to render the fœtus accessible in cases where Cæsarean section *in articulo mortis* would otherwise have been necessary.

The indications for artificial dilatation of the vagina are given by congenital or acquired stenoses and vaginal malformations. In the absence of pathological deformities, it may also become desirable to dilate the vagina in certain cases of slow physiological dilatation.

Finally, we must consider the indications for dilatation of the vulvar orifice. This may be required by reason of persistence of the hymen, the presence of cicatricial tissue, and, lastly, as a prophylactic measure to enable the operator to deliver the patient speedily in the face of impending danger to mother or child, and in any case where he feels that by so doing he can avoid greater injury to the perinæum and vulva than is involved in the operative measures.

We possess two methods of artificial dilatation—the one involving cutting, the other merely stretching. Dilatation by cutting: This method is applicable to cases of persistent hymen, malformations or cicatrices of vulva, vagina, and cervix, and to cases where we are not warranted in using the slower methods, as, for instance, in some cases of placenta prævia, accidental hæmorrhage, and im-

minent danger of asphyxia of the child, as in prolapse of cord. To perform this operation the cervix is exposed by means of a speculum, and steadied by one or two tenacula. With a stout elbow scissors the cervix is then deeply incised right and left, posteriorly and anteriorly. Hæmorrhage is apt to be quite profuse for a few moments, but seldom requires measures for its arrest. After delivery of the child the cut surfaces may be united by sutures or left to themselves if the hæmorrhage has ceased, but it is generally best to use the sutures. This method has yielded excellent results, but is not a favorite one with me. I have seen cases where the extraction of the child through a cervix treated in this manner resulted in extending the length of the wounded surfaces to a dangerous degree. A less radical cutting method, and one that will doubtless yield good results in some cases, is that of numerous superficial incisions around the os.

To produce artificial dilatation of the soft parts by stretching we have a variety of plans at our disposal, such as the tampon, rubber bags of the Barnes, Braun, Tarnier, McLean, and Champetier de Ribes patterns; the graduated bougies of Hegar, and the steel dilators, such as Goodell's, Tarnier's, etc. In certain cases also the laminaria tents are very convenient. The bougies and the steel dilators, are rapid working instruments, and when carefully employed serve their purpose well. For such work as the dilatation of the os in cases of abortion, and particularly to stretch the os some time after abortion has taken place, for the purpose of removing retained portions of the membranes, the bougies are very applicable, for they act quickly and with little danger of lacerating the tissues—they are greatly in vogue in Germany. The instrument called Tarnier's *écarteur* is applicable in cases at or near term. It consists of three steel branches thirteen inches long, with the distal ends flattened and bent over to prevent them from slipping out of the cervical canal. After introducing the blades separately, and adapting them to each other at the pivotal point, the dilating force is supplied by means of a rubber band, which, when slipped over the handles, keeps up a gentle continuous pressure which can scarcely do injury in any case. I have used this instrument with most excellent results in cases of tardy and painful dilatation of the os, and in some cases have been assured by the patient that, far from increasing the pain suffered, it has actually mitigated it.

The tampon has long been used in cases of uterine hæmor-

rhage, as in placenta prævia, mainly, I presume, with a view to arrest the hæmorrhage, but it also possesses very considerable dilating power both directly and indirectly—directly by the mechanical distension of the vagina, whereby the os is also dilated; and indirectly by exciting uterine contractions. I have used it and seen it used in a very large number of cases, and am at present even better satisfied with its action than formerly. The simplest and safest tampon is one made of gauze, preferably iodoform gauze. This kind of a tampon is very readily introduced and withdrawn, while the iodoform possesses both antiseptic and hæmostatic qualities. It should be used in long strips, and in this form can be readily introduced without the use of the speculum, two fingers of the left hand being used as a guide. The gauze should be packed in very tightly, and may safely be allowed to remain as long as twelve hours. I have seen it used in this wise in the preparatory treatment of placenta prævia, when it generally sufficed to arrest even severe hæmorrhage, and after remaining in the vagina for a few hours sufficient dilatation was usually obtained to permit the operator to advance with extraction of the fœtus.

The Braun colpeurynter was used by its inventor only in the vagina—the extension of its use to the lower uterine segment is due to Schauta of Vienna. Like all rubber dilators, it has but little direct dilating force, for if constricted at any point it simply elongates, taking on a sausage-like shape. Its dilating force may be increased somewhat by the exertion of continuous traction while the instrument is *in situ*. In Chrobak's Clinic, in Vienna, it is never used in the uterus. Schauta, on the contrary, sometimes employs it within the uterus in cases of placenta prævia lateralis, but not in the marginal form, for fear of increasing hæmorrhage by further detachment of the placenta. In the central variety, however, he advises to perforate the placenta and then introduce the colpeurynter, which then serves to press directly down on the placenta, and thus arrest the hæmorrhage.

I do not mean to discuss the treatment of placenta prævia at this time except in an incidental manner, but I cannot entirely avoid the subject, because it is in these very cases that we are especially concerned to secure rapid cervical dilatation. The best of all tampons in placenta prævia is that supplied by the leg of the fœtus drawn down until it projects beyond the vulva; but as a dilator it is a partial failure in that it does not act quickly, for by this method of treatment version is regarded as completed when one has pulled down the leg, and the expulsion of the child is left

to the natural forces. So far as the mother is concerned, the results obtained by this method of treating placenta prævia are most excellent; but the fœtal mortality is quite enormous, and if we consider the child's life, as we certainly should do, we must not confine ourselves to this mode of treatment. Of the rubber dilators, that of Champetier de Ribes is undoubtedly the best. It is composed of a silk bag covered with rubber; the silk prevents overdistension, and the rubber enables us to secure proper disinfection of the instrument. The rigidity of the tube to which it is attached facilitates its introduction, and makes it a most convenient instrument. In some cases we shall fail to secure sufficiently rapid dilatation by means of the rubber dilators, and in such cases may have to resort to other methods, as dilatation by means of the hand. Two years ago Dr. P. A. Harris described a method of manual dilatation that would appear to be useful. By this method the index is first used, then the tip of the thumb is introduced just within the os, after which the first, second, third, fourth, and fifth fingers are successively introduced, the thumb meanwhile being employed to make extension, while counter-extension is made by the fingers. Dilatation of the os, whether made by the fingers or by any other method, usually increases uterine contractions, but sometimes this is not the case. In one instance, when I failed to awaken uterine contractions by means of a Barnes bag in the cervix, I introduced a second bag into the vagina, and when this was distended uterine activity was soon manifested, the introduction of the vaginal bag thus acting indirectly as a uterine dilator.

For a number of years past I have from time to time used the rubber bag of Barnes to distend the walls of the vagina, doing this sometimes as preparatory to version in placenta prævia, and at other times merely as a means of expediting labor in tardy and painful cases. When the first stage is greatly prolonged the patient may become quite exhausted before the os has stretched to any considerable extent, and while the vagina is still less prepared for the passage of the child. In a number of such cases I have introduced a Barnes' bag into the vagina and distended it with from twelve to sixteen ounces of water. As a rule such a procedure has materially increased both the force and efficiency of the uterine contractions, the patient meanwhile making but little complaint of the bag. The latter acts just as the protruding membranes should do—it produces gradual dilatation of the vagina, softening the perinæum, and increasing the vaginal secretions. The bag is allowed to remain until expelled by the uterine contrac-

tions, and if only moderately distended at first, I sometimes reintroduce it and allow it to be expelled a second time, after which the perinæum is found to be perfectly softened and easily distended, whereby the second stage of labor is rendered much less painful and protracted than it would otherwise be. I believe the safety of the perinæum is greatly enhanced by such treatment, and can conceive of no reason why the plan may not be employed in numerous cases with the best of results, provided it be used with prudent hands. In using the rubber bags certain precautions should always be taken: thus the bag should first be destended with sterilized water until it has reached the desired size to prove the integrity of the instrument, and to enable us to know just how much water to use after the bag has been placed *in situ*. To make this amount perfectly definite, the quantity of water used in the trial test should be accurately measured, and subsequently the same amount should be used. The best way to introduce the water is by means of Davidson's syringe, which should be worked very slowly, care being also taken to exclude air. Of course the most precise pains should be taken to secure an absolutely sterilized bag. In using the bags to dilate in cases of placenta prævia, we should always bear in mind the dangers of embolism in such cases, for the placental site is so much exposed that the opportunities for such accidents must certainly be greater than in ordinary cases.

Some authorities claim that there is only one legitimate method of vaginal dilatation, and that the cutting one; but after a pretty extensive experience with the plan I have just described, I feel like recommending it to you for further trial, as in my own hands it has often yielded brilliant results.

The proper employment of episiotomy is, I believe, a great aid to us in our obstetrical practice. Its indications can only be learned by experience; but if I were to formulate a rule for novices in obstetrics, I would say: Wait patiently; restrain the advance of the head; give the perinæum ample time to stretch, allowing the head to advance only millimeter by millimeter, keeping the perinæum carefully in view all the time, and then if the mucous membrane is seen to give way at a time when the head has not yet engaged in the vulva with its greatest diameter, push back the head, and make a one-sided episiotomy. If this be done as soon as the faintest sign is seen of perinæal laceration, I believe the perinæum proper may be saved from further damage, in most cases greatly to the patient's benefit.

4320 Lake Avenue.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, December 18, 1896.

The *President*, ADDISON H. FOSTER, M.D., in the Chair.

On Inflammation of the Uterus, etc.

(Discussions postponed from the November Meeting.)

DISCUSSION.

Dr. WILLIAM H. RUMPF: If the papers read at the last meeting were all printed they would form a handbook of gynæcology because of their completeness. They covered the whole field of pelvic inflammation very thoroughly, and consequently there is very little left to be said. For didactic and clinical purposes it would be well to have a subdivision of the various forms of pelvic inflammation. Rouge's division depending upon anatomical bases would seem the most natural—that is, the various forms of glandular, interstitial and diffuse, and the various forms of endometritis deciduæ, endometritis post-partum, and endometritis exfoliativa. In practice, however, it is not possible to make these subdivisions, because it would make necessary an anatomical examination of the endometrium, and that is usually impossible without a curettement which is usually done for curative purposes.

As regards the division by Winckel and various others, according to the etiology, especially the bacteriologic etiology, it is impossible at the present time for us to form a perfect nomenclature, as we are not sufficiently advanced to determine how the etiological factor causes certain forms of endometritis. It is better to continue, for didactic purposes, the old classification according to the anatomical basis until the etiology is better known.

The pathological anatomy of the various forms of endometritis is a very extensive subject, and I think I can illustrate it best by showing various specimens of endometritis. I have put up in the next room about twenty slides which show all the different forms of endometritis, and illustrate what is meant by the different names given to them. The specimens need no further explanation, and all of the members are welcome to look at them. They will describe the pathology better than I can.

Dr. HENRY P. NEWMAN: In general, discussions, that follow a month after the papers have been read, lose a great deal in force and application, and personally I am unable to retain much of the subject matter that was presented here at the last meeting.

Prophylaxis, I think, was entirely overlooked. I will refer to it briefly under four heads: 1. Prophylaxis at the formative stage of puberty or girlhood. 2. Prophylaxis by practising absolute asepticism in treating gynæcological cases. 3. Prophylaxis relative to pueperal cases or to the management of childbed, miscarriages, and the like. 4. Prophylaxis relative to gonorrhœal infection, which includes the sociological problem. I will not elaborate any one of these. The Chicago Medical Society has had a very forcible and unusual presentation of the subject of gonorrhœal infection. The question is whether we, as gynæcologists, and this society as a representative one, have done and are doing what devolves upon us in the nature of prophylaxis along these lines. The subject "Inflammation of the Uterus" was presented by this society in a very thorough and attractive manner; but I regret very much that prophylactic measures were not brought out more forcibly and considered at greater length. The subject is still before us, and I would like to hear a free discussion along this line.

Dr. C. S. BACON: In closing, I will confine my remarks to a brief consideration of the intimate and necessary relation between diagnosis based on a good classification and treatment. A proper classification of the so-called inflammation of the uterus is essential to the establishment of rational principles of treatment. The various infections are combatted in different ways, and hyperplasias of the uterine mucous membranes require quite different treatment from infections.

In the case of infections *prophylaxis* is most important. Puerperal infection is best prevented by securing as perfect subjective disinfection as possible, by avoiding all unnecessary internal examinations and operations, by avoiding dangerous lubricants and by disinfecting the external genitalia. Prophylactic vaginal douches do more harm than good unless examination shows the presence of gonococci in the vaginal discharge. In this case an attempt at disinfection of the vagina should be made.

Non-puerperal, non-venereal traumatic infection is generally due to gynæcological manipulations, and can be avoided only when the gynæcologist thoroughly disinfects his hands and boils his instruments before he makes internal examinations.

Prevention of venereal infection is a problem for whose solution the combined efforts of physicians, sociologists, and legislators are needed. One point may be emphasized, viz., that no man should be pronounced free from gonorrhœa until bacteriological examinations are negative, even after the use of some artificial excitant to produce a recurrence of a checked discharge.

In regard to the *treatment* of an existing *puerperal infection*, we first notice that a differential diagnosis between a simple toxanæmia and one complicated with a bacteriæmia cannot be made with certainty. In the former case the careful removal of the saprophytes from the surface of the uterine mucous membrane with the decidual *débris* in which they grow is indicated. This is most safely accomplished with an intra-uterine douche of sterilized water or salt solution. A curette which carries away Nature's protecting leucocytic wall is absolutely contraindicated. Thomas's wire curette, which would remove loosely adherent pieces of placenta or decidua, might perhaps at times be of service. The dangers of the intra-uterine douche come from an infected tube, from lack of return flow, and from wounds made by the introduction of the tube. The first two dangers can be avoided by using Kelly's modification of the Fritsch-Bozeman tube, and the last by careful introduction of the tube with the patient in good position.

In a bacteriæmia the douche may be of no value, but because the diagnosis can never be made with certainty, it should be given to be discontinued as soon as the nature of the disease is determined. Then we are dependent on supporting treatment. General immunization by streptococcus serum or the production of general leucocytosis are measures not yet beyond the experimental stage. The vaginal evacuation of a secondary pelvic abscess is indicated, but a hysterectomy for a suspected phlegmonous uterus is too grave an operation where the extent of the general and lymphatic infection is quite unknown.

In *acute non-puerperal infection* of venereal or non-venereal origin we should rely on the so-called antiphlogistic treatment which consists in aiding the reactive powers of nature.

The indications for treatment of the *chronic infections*, in cases of chronic endometritis of bacterial origin, are: first, to destroy the infecting microbes; second, to remove their products, and the *débris* in which, at least to a certain extent, they grow; third, to assist the bactericdal efforts of nature. Experience has shown that it is impossible to meet the first indication, owing to the deep

penetration of the microbes into the tissues. The second and third indications are met by providing for good drainage through the correction of mechanical obstruction and thus securing the removal of the mucus and *débris* of the uterine cavity, and by stimulation of local leucocytosis by weak irritants like alcohol or tincture of iodine.

In *hyperplasia* we have to do with structural changes of greater or less extent. The removal of this pathological membrane is often indicated. This may be accomplished in part by the curette. Following the curette a strong caustic like zinc chloride thirty to fifty per cent. may often be necessary for a sufficiently radical removal.

This brief and necessarily incomplete synopsis of the chief indications for treatment of the various so-called inflammations of the uterus and of the measures necessary to meet these indications proves the value and necessity of an etiological classification. The failure to distinguish between the indications for treatment of infections and hyperplasias has often led to improper use of the curette in infections. A study of so-called inflammations from this point of view is suggestive, and promises to lead to much greater advance in treatment.

Dr. T. J. WATKINS (in closing): I have nothing to say except to remind Dr. Newman that the prophylaxis of endometritis received some consideration in my paper read at the last meeting of the Society.

The Pathology of Unintentional Abortion.

BY KARL F. M. SANDBERG, M.D.

(See page 71.)

On motion the discussion of this paper was postponed until Dr. Weston read his paper on the "Prognosis and Treatment of Unintentional Abortion."

Thyroid and Ovarian Therapy in Gynæcology.

BY C. B. STEHMAN, M.D.

(See page 64.)

DISCUSSION.

Dr. JAMES H. ETHERIDGE: I regard the paper of Dr. Stehman as a very valuable one, and believe it is in the direction of restora-

tive medicine. I think it may be called that, as I hardly know by what term to denominate it. We are on the threshold of work in this line. We all remember the writings of Brown-Sequard on a subject akin to this, and how the medical journals at the time were filled with articles on the subject. At one time it was the subject of sincere, earnest discussion and a good deal of ribald jest, and it has fallen into a condition of desuetude. We are now in a position again to study this matter seriously. I believe the thyroid, ovarian, and testicular extracts are in character restoratives. Brown-Sequard stated what is known as a simple physiological fact, that all of the organs of the body contribute to make perfect blood; that each one yields a secretion, and all contribute to make the blood perfect. If one is deficient in secretion, the contribution to the blood is deficient that much. Sooner or later we are going to have the practice of medicine put on a more rational basis. We all know that proximate principles are essential to life. We know there are certain diseases—we will call them constitutional diseases if you please—and that these proximate principles, when introduced into the blood, take away the diseases and restore the system. For instance, in chronic enlargements of the tonsils in children, there is a restorative medicine that will take away these enlargements. So if I had time to think over the subject, I could cite many illustrations.

It would be interesting to know how the thyroid extract does its work and what the effect is upon the blood. What is needed next will be to make a careful analysis of the blood of these patients with a view of determining the proper proportions to be used of the extracts if the deficiency is not restored.

We are just entering upon the transitional stage between the old and new. Articles are appearing in the medical journals of Europe and of this country concerning this subject. The next generation will witness a great improvement in the practice of medicine. Take the case that Dr. Stehman mentions of the secretion of the ovary itself. I suppose he included in that the process of ovulation. I believe there is a contribution to the blood from the substance of the ovary itself which has not been demonstrated yet, and I believe if the ovaries are diseased, if the secretion is diminished in any way, the deficiency will be manifested in dysmenorrhœa, menorrhagia, and the like. We find a certain condition of the blood-vessels and in the structure of the uterus removed for disease which we call pathological.

Dr. FRANKLIN H. MARTIN: I am very much interested in Dr. Stehman's paper, and I desire to ask one or two questions. First, did the doctor administer the extracts to other patients than those recorded? I believe there were six cases reported, and the results were so uniformly good that I would like to know if the extracts were given to other patients and were followed by the same results. I would also ask the name of the firm who prepared the extract and the form of tablets used.

Dr. C. S. BACON: While I can add little or nothing of value to this discussion from my own experience, still, as I had the opportunity of becoming acquainted with the study and practice of Professor Chrobak in this line of treatment, it may be of interest to refer to his work. As is known, some three or four years ago he became so thoroughly convinced of the value of the ovaries that he instituted a line of investigation, with the aid of his assistant, and at the same time began to leave in all cases of cœliotomy a portion at least of the ovary. In all of the laparotomies that I saw made by him, where there was even the smallest particle of ovary that was apparently not diseased, it was left. As many of you know, his observations were published in a preliminary report some months ago, in which he states that he is quite firmly convinced of the value of this procedure. At the same time, he began the admininistration of sheep's ovaries to patients whose ovaries had been removed and who were suffering from the consequent nervous disturbances, and also to patients that suffered from similar disturbances from disease of the ovaries with curative results. His assistant began a series of investigations on the results of implanting pieces of ovary in animals, inserting them both in the peritonæum and also under the skin. When ovarian tissue was inserted in the peritonæum they generally disappeared, but when inserted under the skin they formed an organic connection, and he has shown that manifest traces of ovarian tissue were found weeks and months after being inserted under the skin.

It seems to me, however, that in all of these cases we must always be on our guard with reference to the enthusiastic representations of patients, and all of the cases that are reported should be carefully investigated, and an attempt should be made at least to distinguish between diseases of the ovary and of the uterus. We should also determine the condition of the uterine mucous membrane. It would be interesting in such a report as this given

to-night to have the microscopic findings of the uterine scrapings always appended.

I have one case to report that was so striking that I might mention it in spite of the fact that an exact diagnosis was not made. It was the case of a young woman, twenty-six years of age, who had suffered since puberty, which occurred about ten years ago, with severe dysmenorrhœa. The pain was so persistent every month that there could be no question as to the seriousness of the trouble. No internal examination was made, and hence no exact diagnosis was arrived at. On account of the appearance of a goitre I gave her thyroid extract, and thereafter there was absolutely no pain during her following menstruations. As the thyroid extract did not seem to reduce or benefit the goitre, although it was used for a month, I changed to the thymus extract, which also had no effect on the goitre, but the patient continued to improve, and at the end of seven or eight months menstruation was absolutely normal.

I report this case, in spite of the fact that a differential diagnosis between ovarian and uterine dysmenorrhœa was not made.

Dr. O. B. WILL, Peoria, Ill. (by invitation): I am very much obliged for the courtesy of being asked to participate in this discussion. I do not think I can add anything of special value, although I was deeply interested in the paper presented by Dr. Stehman. However, I want to say that it seems to me the therapeutics of the profession, or the practice of medicine in its therapeutic aspects, has never been in such a chaotic state as at present. Amid the thousand and one bacterial and other organic elements from the outside and inside, the extracts, the secretions, and their inter-relations, hypnotism and Christian science, I am decidedly bewildered. I have endeavored to utilize more or less the various substantial organic products that have been brought to the notice of the profession. In some cases I have seen apparently good results follow their use, especially of the thyroid extract, while in others I have seen the opposite. There seems yet little basis for accurate deduction. So it is with all innovations in medicine. It requires a great deal of investigation to get anything that is of practical value.

I recalled to my mind during the reading of the paper a case that occurred in my practice about four years ago, almost identical in its history with that of the first case described by the author of the paper. A curettement was done twice, and I was unable to

secure a satisfactory result. Subsequently I was informed that the patient had gone into the hands of a Christian scientist, and has now been well for two years. I have come thus to be decidedly sceptical respecting conclusions that do not take into consideration mental impressions and influences, especially when they approach so nearly the borderland of the severely problematical.

Dr. STEHMAN (in closing): I have concluded that the products of Armour & Co. are the best to use. It is sold in ounce bottles, and contains five grains of the extract to each tablet. This is what I have used. I know these extracts have been used hypodermically, but for practical use the tablets of Armour & Co. have served my purpose.

I have used these extracts in probably twelve cases, and I had much hesitancy in reporting these cases to-night, as I am aware there is a great deal of enthusiasm in the first reports, and as my observations have been limited I was a little relucant in bringing them before you.

As I stated in the closing sentence of my paper, I think the value of these extracts can only be ascertained when we get a better idea of their physiologic action. We know that removal of the pancreas, the thyroid, and the adrenals mean death of the individual. We know, too, that the removal of other glands produces profound nutritive disturbances; and it seems to me these facts should be sufficient reason why we should pursue our investigations along this line. There is no speculation about the results of the removal of these glands.

Dr. HENROTIN: What about the preparation of the ovarian extracts?

Dr. STEHMAN: Armour & Co. prepare the ovarian extract from the ovary of the sheep, the thyroid extract from the thyroid gland of the same animal, and the testicular extract from the testicle of the ram.

Each tablet represents a definite quantity of carefully selected raw material reduced by a process of desiccation previous to being incorporated into tablet form.

Artificial Dilatation of the Parturient Canal in Labor.

By J. C. Hoag, M.D.

(See page 84.)

Discussion.

Dr. Frank A. Stahl: I am pleased to have heard the paper of Dr. Hoag, especially the part of it which treats of dilatation of the inferior outlet. Theoretical objections are often made to the introduction of tents and instruments, that they endanger infection. In labor at the third, fourth, and fifth months the subject of dilatation is often a serious one. I have used tents so extensively in these cases that I am surprised to hear they should be considered objectionable. I have never used the bags for dilating the uterus because I have gotten good results with tents, especially in abortions, with retention of the placenta. In cases of hæmorrhage I have had excellent results from the introduction of tents. My experience has been extensive among poor people where the conveniences for treatment are limited. After the use of tents in these cases, if the placenta is not expelled it is easily removed.

Dr. Hoag has covered the subject very well as regards placenta prævia and eclampsia.

As regards cicatrices, the knife may be used, or, as the doctor has suggested, if we have plenty of time, the tampon may be used. I have never yet seen a case where, by waiting, with guiding the head a little, instructing the patient to walk up and down, to assume the erect attitude, it was necessary to use a bag for dilating purposes either in the vagina or cervix. These cases include a great number of virgins and extractions and a smaller number of forceps extractions.

An important obstetrical question to be considered is how to dilate the outlet. Shall episiotomy be central or lateral? Two years ago, at the meeting of the American Medical Association, held in Baltimore, I read a paper in which I took the position that Nature would adopt a central line of incision. I believe the doctor says he was guided by Nature and so adopted Nature's method, and then dilatation was attained to such an extent as to allow the head to be delivered without laceration. We all know

the objection to the lateral episiotomy. I venture to say that nearly every one in this room who has lateral episiotomy has rejected it. Some of the French authorities call attention to the fact that when a lateral incision is made laceration is liable to extend more deeply into the tissues, and thus pockets are formed which increase danger of sepsis. Repair of the laceration is not so easy after lateral as after central episiotomy.

In patients with a rigid outlet, where it is imperative to terminate labor rapidly, I perform central episiotomy rather than produce terrible lacerations by lateral incisions.

I should be glad to learn if there is any way by which infection is known to follow the use of laminaria tents.

Dr. HENRY P. NEWMAN: I cannot agree with the last speaker that sea tangle or laminaria tents are the most effectual agents for dilatation in the class of cases in which he uses them. I think better results can be effected and in a more physiological manner by internal therepeusis without local manipulation of the organs. In such a case as Dr. Stahl speaks of, I should have given the patient a large dose of choral, possibly morphine, and upon a second visit made at about the time at which he withdraws the tent, I should not only expect better results as regards dilatation, but I should feel confident that the cervical canal had sustained no injury or infection. The abrasions that may occur from the repeated introduction of tents and the necessary protracted manipulations I consider unwarrantable.

The methods of rapid dilatation of the genital tract have been presented most thoroughly and adequately by the essayist, and I have nothing further to add unless to suggest the use of glycerine, which has been recently advocated. It is claimed to be a very valuable agent in stimulating the uterus to painless contractions and to dilatation of the cervical canal.

In another class of cases, as in stenosis of cicatricial origin or in stenosis that will not yield to any therepeutic agent other than rapid dilatation, I should prefer anæsthesia and the use of steel dilators. The entire technique, including the delivery of child, can be carried out at one sitting, with each step in the operation under the immediate control of the operator.

Dr. FERNAND HENROTIN: This paper is a plain, well-presented *résumé* of the subject, and he has given us a very sensible and rational exposition of the methods in vogue. At the risk of being called an old fogy, I call attention to the old-time methods. I

refer particularly to dilatation of the rigid cervix in a physiological labor where it is supposed that rapid dilatation is desirable because the patient is exhausted. In the cases indicated by the doctor, where pathological conditions exist and where the indications are plain, we must not forget that we are apt in either haste or a desire to terminate labor to go a little beyond the physiological lines. A woman who is exhausted by labor is very frequently better cared for by giving rest than by dilating the cervix. Any one who has observed a large number of labors when there is rigidity of the os and when the woman is exhausted knows how perfectly labor frequently progresses after an enforced rest. I speak from a large obstetrical experience, and with an aversion to unnecessary manipulations in labor.

As regards episiotomy, for quite a number of years I was in the habit of doing the lateral operation for the purpose of preventing laceration. I first used the lateral incision, but for quite a number of years I have never used anything but the straight middle incision, which I consider infinitely superior to the lateral operation. I believe that lacerations are more frequent, deeper, and more difficult to repair after lateral than after median episiotomy. Any one who has resorted to the lateral incision and then afterward to the middle incision will recognize how more perfectly a middle simple incision can be repaired.

As regards the question raised by Dr. Stahl about the use of tents. Judging from my view, and the reports I have seen and heard, the use of tents of any kind and by any method is absolutely wrong. I have seen deaths and all varieties of sepsis from slippery elm, laminaria and sponge tents.

Dr. C. S. Bacon: I will not refer to the many good points in the paper, nor discuss the important question of the use of the bags of Champetier or other distensible bags in the dilatation of the vagina, but will confine myself to one point in which I differ with the essayist—namely, the question of incision of the cervix. I do not understand that Dr. Hoag intended to give complete indications for the operation of dilating the cervix; but granting that the operation is indicated on account of some serious pathological condition, how shall it be dilated? It is necessary that we should determine whether the upper or lower portion of the cervix required dilating. This is an important question in deciding upon the operation of incision or of dilatation by means of a bag. If the upper part of the cervix is distended, as frequently

occurs in primipara where the cervix is thinned out to the vaginal insertion, with the external os closed or nearly so, we have a different condition from that which exists when the internal os is closed, as happens in multipara when the internal os is not at all dilated, but the external readily admits two fingers. In the latter case incision is contraindicated. In the former case, in primipara, I think it has been pretty well shown that the incision may be the operation of selection, being quicker and less harmful than dilatation.

A word or two in regard to the technique of incision. The originator of the operation of incision of the cervix, Dr. Dührssen, finds it unnecessary to introduce a speculum or to take hold of the cervix with a tenaculum. It is sufficient to grasp the cervix between the fore and middle fingers and make the incision on the volar surfaces of the fingers. What shall be the extent of the incision? The recommendation of Dührssen is to make crucial incisions to the vaginal insertion, first posteriorly, then at the sides, and finally in front. Such incisions dilate the cervical canal completely up to the vaginal insertion, and there is much less danger of subsequent tear than when they are only superficial or extend to a short distance.

Dr. HOAG (closing): I am almost disappointed that none of the members have criticised my paper. I do not even recognize the point of Dr. Bacon's criticism. I think nothing has been said by the speakers that is incompatible with the statements in my paper. As Dr. Henrotin has said, most of the subject has been beaten over in the literature for years, as well as established in obstetrical practice. A portion of this subject, however, is comparatively new, and is worthy of careful consideration. The real point in the paper in which I am interested is dilatation of the vagina. I take issue with some of the statements I have seen in literature by German obstetricians with regard to dilatation of the vagina. They say there is only one method of dilating this organ, and that is the cutting method. I do not think this is correct. Dilatation with rubber bags or with the hands are legitimate procedures. The former especially is one of which we find almost no mention in the literature of the subject. I do not believe there have been a great many cases reported where the vagina has been dilated in this way, and I am a little disappointed that some one has not criticised me in this method, because it involves more or less risk. I think I can take almost any parturient woman, who is at the

beginning of the second stage of labor, where the vagina is still undilated and the perinæum rigid, and if the pains are efficient and the contractions are regular and expulsive in character, I can in a short time get the vagina sufficiently dilated and the perinæum softened for passage of the child. I have done this in numerous cases.

So far as my own experience goes, I perfer instrumental dilatation (and particularly dilatation with the rubber bags) to the various methods of manual dilatation, but I am willing to admit that there are certain cases where dilatation by the bags is not sufficiently rapid in overcoming the resistance of the cervix, and that there are other cases where it is not sufficiently powerful. For the artificial dilatation of the vagina and the distension of the perinæum I believe there is nothing to be compared with the rubber bags, and I see no reason why they may not be often used with great advantage in tardy and painful labor. In cases of this sort, when the patient was greatly exhausted before the second stage of labor had fairly begun, and when, of course, there was no dilatation of vagina and perinæum and the vaginal secretions were scanty, I have often introduced a bag into the vagina and distended it moderately with water for the sole purpose of shortening labor. In such cases we observe a very close imitation of the ordinary processes of labor. The water bag acts just as does the hydrostatic wedge furnished by the pouch of membranes. Dilatation of the vagina takes place as the bag is forced down by the contractions of the voluntary and involuntary muscles, the vaginal secretions become more abundant, and finally as the bag is forced along the perinæum becomes stretched more and more until the bag is entirely expelled. If desired, it may then be reintroduced and distended still further with water, and left to be expelled a second time. Such treatment is usually very efficient. In the first place, the vaginal dilatation is usually accompanied by dilatation of the cervix, and as soon as the head has entered the pelvis it finds the resistance of the soft parts of the parturient canal reduced to almost nil so that the second stage of labor is quickly ended and with safety to the perinæum.

There are two dangers to be avoided—infection and rupture of the vagina. The first may be avoided by ordinary attention to antiseptic details. To guard against the second danger we must exercise great caution. We must consider the distensibility of the vagina, and not tax its tissues too much. The principal cir-

cumferance of the fœtal head are respectively 32 to 34 and 36 om. The colpeurynter, when distended with sixteen ounces of water, measures about 30 om.—that is to say, it measures this amount when not constricted, but when it is introduced into the vagina and then distended with water it becomes elongated, so that if subjected to much pressure it would probably measure considerably less than 30 om. in its greatest diameter. Having determined to use the bag, it should first be tested to ascertain its integrity and strength when distended. It is best to fill it to the required point and then measure its circumference. The water should then be measured so that we may know just how much to introduce when the bag is *in situ.*

Judging from my own practical experience in obstetrics and from very extensive observation in the lying-in hospitals of Europe, I feel convinced that too little attention has been paid to the intelligent application of artificial means of dilating the soft parts of the parturient canal, and particularly the vagina and perinæum.

Dr. NEWMAN: You do not think benefit is derived partially by stimulation of the physiological function, as well as from actual dilatation?

Dr. HOAG: That hardly enters into the scope of my paper. I discussed the mechanical methods of dilatation. The other methods are all in the literature of the subject.

Official Transactions.

T. J. WATKINS, *Editor of Society.*

A REPORT OF THIRTY CASES OF PELVIC INFLAMMATION OPERATED UPON BETWEEN JULY 1, 1895 AND JULY 1, 1896, BY VAGINAL INCISION AND DRAINAGE.*

By Amos Wilson Abbott, M.D., Minneapolis.

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In order to avoid any inaccuracy arising from possible errors in diagnosis or confusion of cases, the notes in these cases for the condition and method of operating were taken immediately after each operation. The data for results were collected, for the most part, between December 15, 1896, and January 10, 1897, all for the especial purpose of determining in how large a number there would be satisfactory cures by this one method of treatment.

These cases include only those in which *no part of any organ was removed* and in which the opening into the peritoneal cavity was made by the vagina, posterior to the cervix.

It is also proper to state that during this period the following classes of cases of pelvic inflammation were not operated by the vagina:

1. Tubercular.
2. Those complicated by large myomata or cystic growths.
3. Those in which there was a probability of an accompanying intestinal obstruction, appendicitis or abscess above a line uniting the anterior superior spinous processes of the ileum.
4. Those in which there was a suspicion of malignant disease beyond the uterus.

It should also be stated that a few cases operated upon in the same manner as those given in the accompanying table, but where organs or parts of organs were wholly or partially removed on account of laceration caused by breaking up adhesions, etc., are not included in the table, but if included would make a higher percentage of permanent cures.

All other cases of pelvic inflammation were operated by this method without further selection, and are all included in the table,

* Read by invitation. For *Discussion* see page 130.

the intention being to arrive at an estimate of the results obtained by treating all possible cases of pelvic inflammation by vaginal incision and drainage and on the basis of extreme conservatism.

The method of operating was in all cases substantially as follows: An incision large enough to admit two or three fingers was made posterior to the cervix; all accessible adhesions were thoroughly broken up; the fingers in the pelvis were assisted, when needed, by abdominal pressure with the other hand, and at the same time all abscess cavities were opened widely; all organs, as far as possible, were replaced. Lastly, placing of iodoform gauze for drainage and retention of prolapsing parts. For drainage, the gauze was loosely twisted, was carried to the highest point in each abscess cavity, using a separate strip for each abscess. For retention of prolapsed parts, the gauze in separate strips was placed in more bulky masses, so as to best subserve that purpose. Additional gauze was loosely laid in the vagina and left protruding, so as to come in contact with gauze placed over the vulva.

Curetting was done in a few cases when especially indicated by a profuse, bloody, purulent, or leucorrhœal discharge.

Three cases were supplemented by Alexander's operation. The value of these statistics is probably not materially affected by these measures, except in so far as the comfort of the patient was increased and the tendency to the recurrence of inflammation diminished by the cleansing of the uterus, and by the maintenance of its normal position.

This table shows, first, that there were no deaths; second, that 27 of the 30, or 90 per cent., have perfectly recovered and are attending to their daily duties, most of them being hard-working women.

The first case among the imperfect recoveries (No. 2 in the table) has a slightly enlarged, but not painful ovary. The uterus is not quite normally movable. She still has painful menstruation, a tender right movable kidney, much gastric disturbance, and a chronic inflammation of the middle ear. Notwithstanding that she insists that her pelvic troubles are decidedly better, and that she would rather be as she is than have her organs removed, she was placed among the imperfect cures, because it is possible that much of her discomfort should be charged to the remaining pelvic trouble.

Case No. 10, condition cannot be ascertained, but it is known that she had a recurrence of the acute symptoms about a month

and a half after the operation, from which she recovered promptly and sufficiently to travel to California.

Case No. 30 had a recurrence of inflammation with pus, for which I made a vaginal hysterectomy in October, 1896.

It is proper to state that 10 of the 30 are of child-bearing age and married. None, I think, however, have become pregnant.

It will be seen that more than ten months have passed since the last operation, which may be counted on the side of conservatism. This is undoubtedly too short a time to warrant the exclusion of the possibility of recurrence. In recurrent pelvic inflammation, however, the attacks are not commonly more than from two to eight months apart, and taking the very robust condition of most of the 27 cases and the absence of physical signs of disease in the pelvis, the outlook is at least hopeful.

Cases Nos. 7 and 20 were gonorrhœal infections of the tubes, undoubtedly cut short.

There is no tendency to hernia in any of the cases. The convalescence, in accordance with the general experience, was remarkably short. The entire absence of anything like a fresh infection of the peritonæum, the freedom from shock, pain, nausea and intestinal paralysis, were in marked contrast to the history of the first few days of what we would call an uneventful recovery from a supra-pubic section with the removal of the adnexæ.

A few points learned by experience in these operations may possibly be of interest.

An elevation of the pelvis of not more than four inches, while not enough to favor the backward flow of fluids will often be of service in keeping back the intesines or omentum, as well as affording a better view of the parts when desired.

The left lateral position is not a good one for the operation, and especially bad for re-dressing the wound, on account of the admission of a large amount of air and a tendency to the distribution of fluids over the peritonæum, unless we are certain that the general peritoneal cavity is shut off above the abscess.

Nothing seems to be gained by the irrigation of abscess cavities, except possibly of the tubes.

Iodoform gauze is a better drain than wicking, this being supported by experiments made outside of the body, showing that gauze, after it is once saturated, will carry over a third more fluid than wicking in the same time. If the gauze is left for about a

week before the first dressing, it is removed with less pain to the patient, and no harm has resulted.

Sutures of the peritonæum to the vaginal mucosa rather interfere with than hasten the proper healing of the parts.

In conclusion, it may be said that the above statistics would indicate that this operation should be adopted, at least as a preliminary measure, in all cases of pelvic inflammation uncomplicated by tuberculosis, appendicitis, intestinal obstruction, malignant disease or large or inaccessible tumors or abscesses.

TABLE ACCOMPANYING A REPORT OF THIRTY CASES OF PELVIC INFLAMMATION OPERATED UPON BETWEEN JULY 1, 1895 AND JULY 1, 1896, BY VAGINAL INCISION AND DRAINAGE.

No.	By Whom Referred.	Name.	Date of Operation.	Exciting Cause.	Condition of the Pelvis Determined during the Operation	Details of operation.	Period and Character of Convalescence.	Present Condition.	Summary.		
									Deaths	Cured.	Not Cured.
1	A W. A.	Mrs. P.	1895. July 1.	Gon.	R. tube contains 6 oz. pus. L. tube apparently normal.	Postr. vag. section Pus evacuated. Gauze drain. No irrigation.	No temp. or pain. Would not remain in bed.	In perfect health.	....	Yes.	....
2	Dr. Hunrer.	Mrs. P.	July 27.	?	Very firm adhesions. Uterus, ovaries and tubes matted together. Small R. tubovarian abscess. Much soft fibrinous exudate in Douglas' sac.	Postr. vag. section Adhesions separated as far as possible. Irrigation. Gauze drain.	In bed 2 weeks. Vomiting 10 days, prolonged by old gastric trouble.	Uterus movable, but not fully. R. ovary large, but not tender. Pelvis otherwise apparently normal.	....	....	Improved.
3	Dr. Thomas.	Mrs. M.	Aug. 6.	Gon.	Double tubovarian abscess. Inflammatory cyst in Douglas' sac. Adhesions throughout. Condition of patient desparate; would not have borne a cœliotomy.	Postr. vag. section Adhesions broken. Abscess and cyst cavities evacuated. Irrigation. Gauze drain.	In bed 10 days, with some fever; 102° F. at times. Sharp recurrence in 2 months on left side. Redrained.	Uterus normally movable. Has not menstruated for 12 months. Nothing abnormal to be detected in pelvis. In robust health. A hard worker.	....	Yes.	....
4	Dr. Bracken.	Mrs. B.	Aug. 19.	Gon.	Two previous attacks of pelvic peritonitis. Pus on both sides; exact location not determined. Dense adhesions.	Postr. vag. section Adhesions not well separated. Pus cavities irrigated and drained with gauze.	Left hospital in 16 days. Some pain, but no temp. for 3 months.	Nothing abnormal in pelvis. Strong and well. Worked hard since leaving hospital.	....	Yes.	....
5	Dr. Rochford.	Miss C.	Sept. 10	Gon.	R. tubovarian abscess. Left tube and ovary adherent, but no pus.	Postr. vag. section Adhesions separated. Irrigation. Gauze drain.	Left hospital in 3 weeks. Discharge from fistula left by operation for 2 months.	Pelvis normal. Working hard. Health perfect.	....	Yes.	....

No.	By Whom Referred.	Name.	Date of Operation.	Exciting Cause.	Condition of the Pelvis Determined during the Operation.	Details of Operation.	Period and Character of Convalescence.	Present Condition.	SUMMARY.		
									Deaths	Cured.	Not Cured.
6	A. W. A.	Mrs. S.	1895. Sept. 13.	Gon.	Uterus retroflexed and adherent. Purulent salpingitis and ovaritis. Patient very feeble.	Postr. vag. section Adhesions separated. Gauze drain without irrigation. Alexander's operation.	Left hospital in 4 weeks. Severe abd. pain for a few weeks.	Pelvis normal. Uterus in normal position. No pelvic pain. Writes: "Better than ever in my life."	....	Yes.	....
7	A. W. A.	Mrs B.	Sept. 17.	Gon.	Gon. 2 weeks. Both tubes distended with pus. Several inflammatory cysts. Adhesions throughout, but easily broken.	Postr. vag. section Cysts and tubes evacuated. Tubes washed out Gauze drain.	Left hospital in 2 weeks. Convalescence rapid.	Pelvis normal. Ruddy and in robust health. Hard worker.	....	Yes.	....
8	Dr. Rochford.	Mrs. S.	Sept. 24.	?	Uterus retroflexed. Adhesions firm and extensive. Tubes thickened and very firm. Ovaries imbedded in adhesions.	Postr. vag. section Adhesions separated. Gauze drain without irrigation. Alexander's operation.	Left hospital in 24 days. Convalescence smooth.	Pelvis normal. Uterus in normal position. Hard worker and in perfect health	....	Yes.	....
9	Dr. Rochford.	Miss D.	Sept. 26.	Gon.	General peritonitis. Mild type. Small R. tubovarian abscess. Uterus retroflexed, with purulent discharge. Very dense adhesions.	Postr. vag. section after curetting uterus. Adhesions separated. R. ovary much torn, but not removed. Gauze drain.	In hospital 2 weeks Uneventful recovery.	Pelvis normal. Uterus in normal position. Gained 20 lbs. Health perfect.	....	Yes.	....
10	A. W. A.	Mrs. C.	Oct. 6.	?	Now genl. peritonitis. Several previous attacks. Pus in both tubes, and several other small pus foci.	Postr. vag. section Pus cavities opened and septa broken as far as possible. Gauze drain.	Left for California in 2 weeks, contrary to advice. Was improving rapidly.	Had recurrence in 2 months.	....	....	Unknown.
11	Dr. Nelson.	Mrs. H.	Oct. 24.	Gon.	Pus in both tubes and other small pus cavities. Inflammatory cyst in Douglas' sac.	Postr. vag. section Thorough evacuation of pus and serum.	Convalescence began immediately. Normal temp. af-	Rosy and in robust health.	....	Yes.	....

No.	By Whom Referred.	Name.	Date of Operation.	Exciting Cause.	Condition of the Pelvis Determined during the Operation.	Details of Operation.	Period and Character of Convalescence.	Present Condition.	SUMMARY.		
									Deaths	Cured.	Not Cured.
			1895.		Acute attack, T. 103° F.	Gauze drain without irrigation.	ter second day. 10 days in bed.				
12	A. W. A.	Mrs. I.	Nov. 11.	?	Double hydrosalpinx; very extensive, though not very firm adhesions.	Postr. vag. section Adhesions separated. Fluid evacuated. Gauze drain.	Gradual, but quite well in 3 weeks, so as to resume her housework.	In perfect health.	....	Yes.	....
13	A. W. A.	Mrs. G.	Nov. 12.	?	Uterus retroverted. Chronic ovaritis and salpingitis. Old, firm and extensive adhesions.	Postr. vag. section Adhesions separated. Gauze drain without irrigation.	In bed 1 week. Very rapid recovery.	Uterus in normal position. Very hard worker.	....	Yes.	....
14	Dr. Fifield.	Mrs. P.	Nov. 15.	Gon. suspected.	Desperate case. Patient thoroughly septic. R. pelvic abscess size of cocoanut. L. abscess size of orange. Ovaries involved in both abscesses. Other small pus cavities.	Postr. vag. section All pus evacuated. Septa broken. Fistula accidentally made by breaking into rectum. Irrigation and gauze drain.	3 or 4 months delayed by secondary abscess, pointing above Poupart's Lig. Also by hæmorrhages from bowel.	In splended health Fistula healed.	....	Yes.	....
15	Dr. Lalliberte.	Mrs. R.	Nov. 18.	Gon.	Double chronic salpingitis. Recent inflammatory cyst. Old hæmatoma of L. ovary. Many adhesions.	Postr. vag. section Adhesions separated. Cyst and hæmatoma evacuated. Gauze drain.	In bed 3 weeks. Recovery rapid.	In perfect health, notwithstanding a fresh attack of gonnorrhœa in July, 1896.	....	Yes.	....
16	A. W. A.	Mrs. D.	Nov. 30.	Abortion	Double salpingitis. Large R. extra-tubal abscess. Not definitely determined whether R ovary is involved. Very general adhesions.	Postr. vag. section Adhesions separated. Pus evacuated. Gauze drain without irrigation.	In hospital 2 weeks. A slight recurrence of pain and temp. in 1 month relieved by rest.	In robust health. Is a very hard-working woman	....	Yes.	....
17	A. W. A.	Mrs. M.	Dec. 21.	?	Uterus retroflexed. Chronic salpingitis and ovaritis. Small myoma at-	Postr vag. section Adhesions separated.	3 weeks. No temp.	Pelvis normal. Doing heavy housework for	...	Yes.	....

No.	By Whom Referred.	Name.	Date of Operation.	Exciting Cause.	Condition of the Pelvis Determined during the Operation.	Details of Operation.	Period and Character of Convalescence.	Present Condition.	Summary. Deaths	Cured.	Not Cured.
					tached to rectum as well as uterus.	Myomectomy. Gauze drain.		large family.			
18	Dr. Cutts.	Mrs. M.	Dec. 26. 1896.	Gon.	Double salpingitis. Inflammatory cysts and extensive but easily broken adhesions.	Postr. vag. section Adhesions separated. Cysts evacuated. Gauze drain.	2 weeks. One recurrence July 1896, requiring a second incision.	In good health. Doing her own housework.	....	Yes.	....
19	Dr. Lalliberte	Mrs. P.	Jan. 7.	?	Very desperate case. Bedridden 6 months. Both tubes full of pus. R. tube contained old, cheesy mass in upper wall. Universal adhesions.	Postr. vag. section Tubes emptied, washed and drained with gauze. Cheesy mass excised.	Six months, due to secondary abscess pointing above Poupart's Lig. Vag. hysterectomy would have been the better operation	General health good. Pelvis normal, except that fistula from secondary abscess not quite closed. Doing her own housework.	....	Yes.	....
20	Dr. Weston.	Mrs. J.	Jan. 10.	Gon.	R. tube filled with thin pus. L. tube contained only a few drops. Gonococci found in cells from tubes not in pus. Infected by husband 10 days before.	Postr. vag. section Tubes washed out with bichloride solution and drained with gauze.	In hospital 2 weeks. No temp. or pain.	Health perfect. Hard working woman.	....	Yes.	....
21	Dr. Stone.	Miss C.	Jan. 13.	?	Chronic salpingitis. R. ovary contained large hæmatoma, and was adherent to rectum. L. ovary cystic and also contained a large hæmatoma.	Postr. vag. section Adhesions separated. Cysts and hæmatomata emptied. Gauze drain without irrigation.	In bed 2 weeks. Convalescence afterward slow. Patient insisted on being about and overseeing a large establishment.	Health good. Gained in weight. On her feet constantly, but no pain. Uterus freely movable.	....	Yes.	....
22	Dr. Sweet.	Mrs. S.	Jan. 14.	?	Chronic salpingitis. L. tube and ovary closely bound together and to L. side of Douglas' sac. On	Postr. vag. section Adhesions separated. Gauze drain with-	4 weeks in bed. Convalescence rather slow.	Health good. Gained flesh very rapidly. Menstruated only	....	Yes.	....

No.	By Whom Referred.	Name.	Date of Operation.	Exciting Cause.	Condition of the Pelvis Determined during the Operation.	Details of Operation.	Period and Character of Convalescence.	Present Condition.	Summary. Deaths	Cured.	Not Cured.
					R. side the adhesions were less firm.	out irrigation.		once or twice since operation.			
23	Dr. Sweet.	Mrs. F.	Jan. 15.	?	R. ovary and fimbriated extremity of R. tube adherent to bottom of Douglas' sac. R. ovary covered in by dense exudate. L. tube and ovary in about same condition, but higher.	Postr. vag. section Ovaries shelled ont of exudate. Tubal adhesions separated. Organs packed up high with gauze.	Left hospital in 2 weeks. After convalescence rather prostrated on account of severe attack of bronchitis.	Pelvis normal. "No former pains."	....	Yes.	....
24	Dr. Hall.	Mrs. R.	Jan. 21.	Gon.	Exudate extends across pelvis and within 2 in. of navel. Exact relation to adnexæ not made out. Abscess in R. pelvis, 1 pint foul pus. Left abscess, 4 oz. Desperate case. Patient septic, delirious, vomiting.	Postr. vag. section Abscesses opened and drained with gauze and irrigation.	In hospital 4 weeks. 2 months after returned with abscess pointing in median line below navel. Drained with gauze.	In robust health. Uterus freely movable.	....	Yes.	....
25	Dr. Weston.	Mrs. B.	Jan. 28.	Gon.	Uterus held in retroflexion by dense adhesions. Inflammatory cyst in Douglas' sac. R. tubovarian abscess. L. tube and ovary slight adhesions only.	Postr. vag. section Adhesions separated. Pus evacuated. Gauze drain without irrigation.	In hospital 2 weeks. Convalescence rapid.	In robust health. Working hard.	....	Yes.	....
26	Dr. Lalliberte.	Mrs. S.	Jan. 28.	?	Inflammatory cyst in Douglas' sac, 6 oz. R. tube, 1 oz. pus. L. tube and ovary normal.	Postr. vag. section Fluids evacuated. Irrigation. Gauze drain.	3 weeks.	Pelvis normal. Health perfect.	....	Yes.	....
27	Dr. Weston.	Miss D.	Jan. 31.	Gon.	Prostitute. Frequent previous attacks of gon. Abscess in Douglas' sac, 4 oz. Adhesions too dense to be separatd. Relation of abscess to tubes and condition of tubes and ovaries cannot be determined.	Postr. vag. section Abscess opened. Irrigation. Gauze drain.	In hospital 10 days.	Was well Sept. 1, 1896. Condition of pelvis not ascertained.	....	Yes.	....

No.	By Whom Referred.	Name.	Date of Operation.	Exciting Cause.	Condition of the Pelvis Determined during the Operation.	Details of Operation.	Period and Character of Convalescence.	Present Condition.	Summary. Deaths	Cured.	Not Cured.
28	A. W. A.	Mrs. K.	Feb. 23.	?	Both ovaries and tubes prolapsed and adherent. Small myoma attached to fundus and rectal wall.	Postr. vag. section Adhesions separated. Myomotomy. Gauze drain.	In hospital 2 weeks.	Health good. Attends to her household duties.	....	Yes.	....
29	Dr. Golden.	Mrs. H.	Feb. 26.	?	Thick old exudate between uterus and rectum. R. ovary and tube buried in this exudate. Deep fluctuation.	Postr. vag. section R. ovary and tube shelled out of exudate. Mass above now apparent. Punctured with scissor points, but no pus. Gauze drain.	On sixth day after operation 6 oz. of pus suddenly escaped, after which convalescence was very rapid.	Health good, except chronic rheumatoid arthritis. Pelvis normal.	....	Yes.	....
30	Dr. Legault.	Mrs. M.	June 24.	Gon.	Abscesses on both sides of pelvis, involving tubes and ovaries. Extensive and firm adhesions.	Postr. vag. section Pus evacuated. Gauze drain.	Rapid improvement. Recurrence of pain, fever and exudate in 2 months.	Vag. hysterectomy, Oct., 1896.	....	....	Yes.

21 South Tenth Street, Minneapolis, Minn.

A CASE OF BEGINNING TUBERCULOSIS OF THE MESENTERIC LYMPH GLANDS REVEALED BY AN EXPLORATORY CŒLIOTOMY.*

By Reuben Peterson, M.D., Grand Rapids, Mich.

The interesting features of this case and the various questions to which it gives rise have led me to report it this evening.

The patient is a delicate child eleven years old. The family history is markedly tubercular, three paternal aunts and one paternal uncle having died of phthisis. One maternal aunt also died at an early age of an acute form of the disease. While the parents have never manifested any tubercular symptoms, they are people of weak constitutions and have little power of resistance. The elder sister, a girl of eighteen, has been an invalid for the past two years. She is now developing a cough, with scanty expectoration, though physical examination fails to reveal any localized tubercular process. Last May I saw in consultation another sister, aged twelve, who was in the last stages of general tuberculosis. This little patient had had abdominal pain for over six years of such severity as to interfere with her studies and play. The abdominal symptoms became more marked three months before death. Ascites and general infection followed. Some few weeks after her death I was asked to see the present patient, whom the family were positive was developing the same symptoms which had proved fatal in her sister's case. A most careful examination failed to reveal any localized tubercular process. The prominent symptoms were indefinite abdominal pain, a troublesome nausea, and general malaise. There had never been any irregularity of the bowels. Tonic treatment proved of little avail except in remedying the marked anæmic condition of the patient. January 11 I saw her again after an interval of several months. I found upon examination a localized tenderness over an area as large as the palm of the hand situated two inches to the right and an inch above the umbilicus. Otherwise the examination was negative. The general appearance had changed but little. The nausea was more marked and was accompanied with a constant desire for food, but at times complete inability to swallow it.

* Read by invitation. For *Discussion*, see page 124.

The family was advised that the localized abdominal tenderness was probably due to a tubercular process of some kind, and an exploratory cœliotomy was urged. This was performed at Butterworth Hospital three days later. An inch and a half incision was made in the median line midway between the pubes and umbilicus. The exploring finger carried to the site of the abdominal tenderness detected a chain of enlarged glands in the mesentery of the small intestine. These glands averaged 1½ cm. long by 1 cm. wide. They were freely movable underneath the peritonæum. A small loop of gut, together with the mesentery, was brought outside and one of the glands removed for microscopical examination and the peritoneal incision brought together by fine catgut. The enlarged glands were distributed throughout the mesentery, but nowhere were they in such numbers as at the place just described. The intestines looked normal, as also did the appendix. The following is the report of the hospital's pathologist, Dr. J. B. Whinery:

Report of Dr. Whinery.

Enlarged gland from the mesentery, hardened in absolute alcohol and imbedded in paraffin. Cut sections stained for tubercle bacilli. "Carbol Fuchsin method." Examination negative. Sections stained with lithium carmine and picric acid, showed proliferation of glandular tissue, occasional groups of cells, probably of early tubercular formation. Giant cells absent. No caseation or breaking down of tissue.

The ultimate result of this case is of course problematical. It remains to be seen whether the opening of the peritonæal cavity in the early stages of mesenteric tuberculosis will have any appreciable effect upon the progress of the disease. That this same procedure has accomplished most remarkable cures in peritonæal tuberculosis is beyond question, yet why this happens is still far from being satisfactorily explained. Some six years ago I assisted in making an exploratory cœliotomy on a woman for an obscure abdominal trouble. The mesenteric glands were found universally enlarged, although unfortunately none were removed for subsequent examination. The case was thought to be tubercular, and an unfavorable prognosis given. The woman is alive and well today, having since given birth to a healthy child. The similarity in the two cases leads me to think that possibly under the proper treatment the present case may also eventually recover.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, January 15, 1897.

The *President*, ADDISON H. FOSTER, M.D., in the Chair.

Actinomycosis of the Left Mamma.

Dr. L. L. McARTHUR: The patient presented this evening is a woman, twenty-two years of age, unmarried. She has always lived in Chicago, except one summer, about four years ago, when she lived on a farm north of this city. She had no manifestations of the disease until eight weeks ago. About eight weeks ago the patient accidentally discovered a small, flattened mass in the upper part of the left mammary region. The mass measured about 1 by 2 inches in area, was oblong in shape, free from pain, but tender to pressure. Two days later she consulted Dr. Abt, who subsequently referred her to me. The patient was anæstheized, an incision was made over the tumefaction, and a small piece was removed for microscopical examination. This eventually proved to be normal mammary glandular tissue. The wound healed by first intention. Three weeks later the patient noticed a small discharge of pus from a sinus situated above the site of the exploratory incision. The discharge was thick and yellow, and at times mixed with blood. The patient was admitted to the Michael Reese Hospital on November 16, 1896. On November 17 she was anæsthetized, and a semicircular incision was made about the inner half of the left breast and the breast elevated. The pectoralis major and minor muscles were incised, and a dirty chocolate brown *débris* was found behind the mamma and under the pectoralis major. In it many minute yellowish granules were found, which under microscopic examination revealed the typical actinomycotic ray fungus. The walls of the cavity containing the *débris* were covered with numerous small sulphur-yellow colored bodies. The growth showed a tendency to spread after the operation. On December 8 a secondary operation was performed. The gland was almost dissected off, being left to hang on its outer edge, the necrotic *débris* curetted out, and the wound cauterized (actual) then left to heal by granulation. Since that time numer-

ous subcutaneous sinuses have appeared at different places near the edge of the wound, the discharge always containing the characteristic granules. In dressing the wound 95 per cent. carbolic acid was used for injecting into the sinuses, which checked the progress of the disease.

On January 15, the wound was found to be in excellent condition, covered with healthy granulations, rapidly healing, and the patient has gained twelve pounds in weight.

There was no history of any former inflammatory trouble, no abscesses in the neck, no decayed teeth, no pulmonary trouble, or symptoms referable to the mediastinum, and the question arose as to whether it was a new growth or a chronic specific inflammation—that is, tubercular or syphilitic. There is no family history of either tubercular or leutic trouble, hereditary or acquired.

DISCUSSION.

Dr. BINKLEY: What is the orgin of the infection?

Dr. MCARTHUR: I do not know. We have not been able to trace it. There was no external lesion to be found anywhere, no bronchial or throat trouble. I might say here that the patient has been under iodide of potassium treatment, which is the only known medication which seems to influence the course of the actinomycotic disease. Biological experiments have shown that the influence of iodide of potassium, introduced into the culture medium in which this organism grows, does not check the growth of the organism; it seems to be resident in the protoplasm of the cellular tissues of the body, that enables it to react successfully against the attacks of actinomycosis.

Dr. ALEXANDER H. FERGUSON: I have never seen a case of actinomycosis of the breast. Such cases are extremely rare. I had one case of the disease which may be of interest to the Society; it followed an operation for the radical cure of hernia. Some two years ago in using catgut in an operation for the radical cure of hernia the wound healed all right until about the third week, when a small sinus developed, and three weeks after that there was a fully developed pathological mass, presenting all the characteristics that have been shown this evening in Dr. McArthur's case. Microscopical examination revealed it to be actinomycosis. A secondary operation was done with a view of removing this mass. The abdomen was opened, we removed a large amount of omentum, and found that the disease had gone beyond the omen-

tum and implicated the bowels. The patient recovered from this operation, and left the hospital with the growth still in progress, went to the poorhouse and died there. This is the only case of actinomycosis I have ever had.

Dr. WELLER VAN HOOK: I would like to ask Dr. McArthur whether he used potassium iodide in this case.

Dr. MCARTHUR: Iodoform has acted better than anything I have tried. I have used iodine, carbolic acid, and iodoform, injected into the sinuses, and iodoform seems to act better than any of the others.

Dr. VAN HOOK: I have had one case of actinomycosis of the jaw, which involved the lower jaw up to the ramus, and extending along the fascial layers of the neck, the disease being so extensive that its complete extirpation was impossible. Iodide of potassium, given in as large a quantity as possible, did not influence the course of the disease, contrary to what is reported by European surgeons.

Dr. FERGUSON: Iodide of potassium had no effect upon my case whatever, and I gave it continually.

A New Speculum.

Dr. AMOS W. ABBOTT, of Minneapolis, Minn.: The instrument that I wish to present to you this evening is a self-retaining speculum, adapted for country practitioners or those who do not have an office assistant. It will take the place of a Sims speculum. I have given it a thorough test in operations upon the cervix, for vesico-vaginal fistula, curetting, dilatations, etc. It can be used with the patient in the knee-chest as well as in the dorsal position.

Multiple Myofibroma of the Uterus.

Dr. G. WILLIAM REYNOLDS: This specimen was removed from a patient yesterday morning at St. Joseph's Hospital. She is forty-nine years of age, married, and has never borne children. This tumor was not noticed, until about three years ago. Within the last six months its growth was so rapid that it caused the patient a great deal of distress, and she consulted Dr. Otto, who referred her to me. On palpation I found a large tumor extending about three inches above the umbilicus, quite movable, and non-fluctuating. On digital examination the mass extended to the floor of the pelvis. My diagnosis was multiple myofibroma.

I made the usual median abdominal incision, from a point about

2 inches above the umbilicus to an inch of the symphysis pubis. The tumor was readily delivered and the ovaries and tubes tied off on either side. The uterine arteries were then tied and the tumor amputated. The operation was bloodless. At the time of the operation the tumor presented the appearance of malignancy, and although it was originally a subserous myomatous growth, I believed at the time of operation that a transformation from a benign to a malignant growth had taken place, and thought it advisable to remove the ovaries and the uterus along with it by supravaginal amputation. If I were not suspicious of its having been a malignant growth I should not have removed either the ovaries or the uterus. There was very little shock following the operation. The temperature was a little elevated, perhaps 100½°, but I attribute the elevation of temperature to fermentation fever, considering that it occurred so soon after the operation. Had the temperature arisen a degree two or three days after the operation I certainly should have suspected infection, but this evening when I saw the patient the temperature was gradually dropping, and she was doing very nicely.

I used sterilized catgut for sutures and ligatures after the new formula given by Professor Senn (an improved Hofmeister's method of sterilization of catgut), which has been prepared by the Sisters of Charity of St. Joseph's Hospital. He has written an article on this subject, which was published in the *Journal of the American Medical Association*, December 12, 1896, p. 1219. The catgut is prepared and placed in a 4 per cent. solution of formalin, in which it is allowed to remain for forty-eight hours, after which it is placed in a running stream of water (sterilized) for twelve hours. Warm water is preferable. It is then boiled for from fifteen minutes to half an hour. Having gone through this process, it will kill any microbe or the spores of microbes that are known to exist. It is afterward preserved in absolute alcohol, to which is added 10 per cent. iodoform and 5 per cent. glycerin. I have used this preparation of catgut in three cases of hysterectomy without any septic infection following in any of them. I therefore feel that we have reached perfection as far as aseptic catgut buried ligatures are concerned, for we avoid the great bugbear that we meet with in using silk. If infection should occur, we do not have to wait for weeks and perhaps months until the ligature becomes detached before the fistulous opening closes. We are absolutely sure that it is aseptic, and it is perfectly pliable.

It does not lose any of its strength, and you may use as much force as you wish in tying it and you cannot break it. It is as strong as silk.

After removing the tumor I amputated at the internal os, covered the stump with peritonæum, and sutured it to the broad ligaments on either side, in order that the patient might not in the future be the victim of cystocele, proctocele, or the unpleasant after effects of these operations which sometimes occur. In closing the abdominal wall I used four rows of sutures: First, catgut to close the peritonæum; second, silkworm gut inserted down to the peritonæum, but not into the peritonæal cavity; third, catgut to suture the external oblique facia; fourth, after tying the silkworm gut sutures I used horsehair to approximate the skin.

Dr. WELLER VAN HOOK: If any one tries to sterilize catgut by Hofmeister's method, let him be sure that the water is boiled before the formalin is added, otherwise the catgut will sometimes be spoiled because of the collection of oxygen bubbles on the surface of the catgut. As the water gets warm the oxygen is separated from it, thus keeping the formalin away from the catgut. The water should be boiled beforehand in order to drive the oxygen away. This point is mentioned because not referred to by some American writers who have dealt with the subject.

Dr. REUBEN PETERSON: If I understood Dr. Reynolds correctly, he said he suspected at the time of the operation that the tumor was malignant, and that the subsequent microscopic examination has proved this to be true.

Dr. REYNOLDS: I said macroscopic examination.

Dr. PETERSON (continuing): As I live outside of the city I do not have an opportunity to see much of the work of the different gynæcologists in Chicago. I could not exactly get the drift of the doctor's argument for doing a supravaginal amputation of a uterus that he suspected to be malignant. Under the circumstances I should think it would be a better plan to also remove the cervix. I judge from the doctor's further remarks that the reason he did not do so was his fear that subsequently the patient might have rectocele or cystocele.

My experience with hysterectomy for uterine fibroids is limited. I have only operated upon twelve cases, but I have been able to follow the after histories of these cases very accurately, although a period of over four or five years has elapsed since the operation was performed in some of the cases. I have not as yet

encountered a case of cystocele or rectocele, and in eight of the cases I removed the entire uterus, cervix and all. I always employ this method because it establishes better drainage, and one of my reasons for removing the cervix is on account of possible malignancy which may follow at the age in which these tumors are usually removed.

I was also interested in the doctor's method of suturing the abdominal wound. I cannot see the reason why silkworm gut sutures should be passed down so far and then tier sutures used, because microscopical examination has shown that infection comes from the skin, and that it is liable to travel down the suture, and in that way infection of the deeper structures is more apt to arise than if the tier suture had been used and silkworm gut or horsehair for the skin.

Dr. T. J. WATKINS: I would ask Dr. Reynolds if the catgut swells much in this process of preparation. At St. Luke's Hospital experiments with the method described by Dr. Senn have been made, and the catgut has swollen. Why is the catgut placed in running water for so long a time? What would be the objection if some of the formalin was left in the catgut, as formalin is a strong antiseptic? Is ordinary hydrant water used?

Dr. FERGUSON: Is the catgut tested bacteriologically before it is used for surgical purposes?

Dr. REYNOLDS: In regard to catgut, I believe those who have been experimenting, as Dr. Watkins says, at St. Luke's Hospital, made a mistake in not winding the catgut sufficiently tight. It should be wound tightly on glass tubes, one layer only, and tied tightly at each end. If it is not tied tightly it will certainly swell. We have made bacteriological tests before using the catgut, and have found it sterile. In no case have we had infection following its use. We always use sterilized warm water during the process of washing the catgut. The formalin hardens the gut, and if any spores should remain in the catgut they are developed into pathogenic microbes while in the running water, and then are afterward destroyed by boiling. I do not know but formalin might have a deleterious effect upon the tissues. Dr. Senn's idea in using iodoform instead of carbolic acid or bichloride of mercury is that it has a less irritating effect upon the tissues, which I believe to be true.

Dr. HENRY P. NEWMAN: How do you get your warm, running, sterilized water?

Dr. REYNOLDS: We have a large reservoir connected with the boiler in the engine-house of the hospital, and this is kept full.

Dr. NEWMAN: Is the catgut being prepared constantly?

Dr. REYNOLDS: Yes. In regard to Dr. Peterson's remark as to why silkworm gut was used, if I understand him rightly, he thought there was danger of silkworm gut being introduced down through the skin to the peritonæal cavity. For tha reason alone I inroduced the silkworm gut down to but not into the peritonæal cavity. The peritonæum is closed with sterilized catgut, and silkworm gut sutures are used to close the muscles, the fascia and the skin, but the sutures do not enter the peritonæal cavity. The fascia is again sutured separately in order to secure adequate union. I did not remove the cervix, for the reason that I thought I had reached the limit of the disease. If the tumor was a sarcoma, as I had suspected, it is not likely that it would implicate to any very great extent the cervix, as we know that sarcomatous growths do not, as a rule, follow the lymphatics, but may follow the venous circulation. I am satisfied the tumor will not recur in the cervix, but it may do so by metastasis in other parts of the body.

Dr. M. L. HARRIS: In answer to Dr. Watkins' question with regard to placing catgut in formalin solution, I will say that the method which Dr. Senn described was devised and developed by Hofmeister. The object of placing catgut in formalin solution is for the peculiar and specific property which the formalin has of rendering the catgut insoluble in hot water, and thus permitting it to be boiled. The formalin is not used on account of any antiseptic property which it may possess, nor to render the catgut sterile, but is employed entirely for the peculiar property which it has rendering gelatinoid substances insoluble in hot water. It is then permitted to remain in running, ordinary faucet water. It has been shown that if catgut be allowed to remain in contact with formalin beyond a definite length of time, the formalin spoils the catgut; consequently it is placed in running water to remove all the formalin from the catgut. After this stage the catgut may be permitted to remain almost indefinitely before being sterilized. It need not be sterilized at once, although it is better to do so. When I say an indefinite time I mean several days or a month. After the last traces of the formalin have been removed, the catgut is then boiled, and it stands the temperature of boiling water by virtue of the change which has been wrought by the formalin.

The sterlization is due entirely to the boiling. The catgut may be boiled more than once. If it should become soiled after the first boiling it may be reboiled. It will stand reboiling a number of times, but not indefinitely, because after two or three boilings the tensile strength of the catgut is diminished.

After being sterilized by boiling the catgut should be preserved in some antiseptic solution, such as alcohol, glycerin, bichloride of mercury, etc.

Extra-Uterine Pregnancy.

Dr. MARTIN W. BACON (present by invitation): This is a specimen of extra-uterine pregnancy which was removed on the 4th of this month. It has some points of more than ordinary interest; first, it was located a little differently from those we ordinarily find; and second, the symptoms were somewhat obscure. The patient was a woman, twenty-four years of age, and had been married three years. Menstruation began at the age of thirteen and a half years, had always been regular but painful, and lasted one or two days. Her last menstruation occurred on October 1. The following menstruation was delayed five days, when it suddenly appeared at breakfast-time, but was not accompanied by more pain than usual, but she thought the pain was a little more severe than usual. There was a very slight but continuous flow from that time until the expiration of five weeks, when I first saw the patient. By as careful an examination as I could make under the circumstances I failed to detect any enlargement, although the patient would not submit to a very careful and thorough examination. I asked the privilege of putting her under an anæsthetic to complete the examination, and the next day, the 16th, under complete anæsthesia and perfect relaxation, I was unable to detect any special enlargement of either tube or ovary, but it seemed that the left ovary was a little enlarged, but not enough to be appreciated. After examination under the anæsthetic I was somewhat disposed to change my first diagnosis of probable extra-uterine pregnancy. I cleaned out the uterus with a dull curette carefully and removed what looked like placenta membrane, but which later proved to be deciduous. There was no reaction from the operation. The flowing ceased for about four days, when it again continued as before. At this time she suffered a little pain, but from any of the statements I could get from the patient she had at no time well-marked pain. This slight pain continued

until the last day of the month. On December 31 she was taken with a somewhat characteristic and severe pain. I was away at the time, and another physician was called, but I saw the patient early the next morning. At that time the tumor could be easily mapped out, and I asked Dr. Watkins to see her with me. She was taken to the hospital the next day, and operated on January 4. The tumor was located at the extreme end of the tube. All or the ovarian tissue which was found upon that side was incorporated in the tumor. The tube is patent, one end of it being clamped off.

There was one peculiarity about this case. The other tube was attached very firmly to the right ovary and distended with about one half ounce of bloody serum. The adhesions were so dense that it was not possible to separate them without tearing the ovary. We incised the tube, stripped it very carefully, leaving an opening, and stitched the mucous surface to the peritonæal surface at the end of the tube, as the patient refused to submit to any operation which would remove both.

I have had some microscopic slides made from the section that was removed, but the microscopic report does not throw any light upon the subject. The slide shows an ordinary cyst wall of fibrous tissue with a very abundant supply of blood vessels. A small fœtus can be seen in the centre of the mass. The ovary is spread out over a part of the mass. Part of the wall seems to be firmly organized blood clot.

Syphilitic Osteochondritis.

Dr. KARL F. M. SANDBERG: I have here a few sections of bones of a syphilitic fœtus showing syphilitic osteochondritis. They are sections of the femur and of the upper and lower extremities of the humerus. They show the characteristic broad high-colored demarcation line between the bony part and the epiphyses.

A Case of Beginning Tuberculosis of the Mesenteric Lymph Glands Revealed by an Exploratory Cœliotomy.

BY REUBEN PETERSON, M.D.

(See page 114.)

Tubal Pregnancy.

Dr. PETERSON exhibited the following specimens and related their histories:

Mrs. K., aged thirty-four, married seven years, never preg-

nant. During the past few years the patient has had pain in the lower abdomen, and other symptoms indicative of chronic disease of the appendages, but has led an unusually active life until last March, when, after missing one menstrual period, she was seized with a sudden sharp pain in the left pelvis, and was confined to the bed for five weeks with extreme abdominal tenderness accompanied with tympanitis. She recovered very slowly from this attack, and continued to suffer from an intense backache and pain and tenderness in left side, which led her to consult me. Examination showed an extremely tender mass, the size of the fist, attached to the left side of the uterus and lying upon the floor of the pelvis. As the patient was extremely anxious to avoid an operation, she was treated at the office for a number of weeks with ichthyol tampons, with a perceptible diminution in the tenderness of the mass, but no perceptible decrease in its size. As the patient's general condition was not improving, and as she was prevented from following her occupation, operation was advised and accepted. Operation, December 22d, at Butterworth Hospital. Upon opening the abdomen the mass in the left pelvis was found to consist of a tubal gestation the size of a hen's egg everywhere adherent to the intestines. The mass was only enucleated after a tedious dissection, and with the aid of Trendelenberg's position. The right tube and ovary were adherent and prolapsed. The fimbriated extremity was non-patent, and as the patient had requested that she be made well at all hazards, these were removed. The abdominal incision was closed with catgut for the peritonæum and fascia and silkworm gut for the skin. No irrigation or drainage was employed. The patient has made an uninterrupted convalescence, and is now up and around the hospital, and will be discharged in a short tiime.

The only point with reference to the operation which is particularly interesting is in regard to the route which was chosen in this case. This was a typical case of extra-uterine pregnancy which was not being absorbed, and it would have been impossible to have enucleated the mass through the vagina, even if the proper instruments had been used and great skill had been displayed in the operation, because the bowels were very adherent to the mass, and it was only by means of the most delicate manipulation, by the use of the Trendelenberg position, that the adhesions were separated without endangering the integrity of the bowel wall.

An Imperfect Uterus.

The next specimen I show you is a rather unusual one. This uterus, tubes, and ovaries were taken from an old woman about seventy-five years of age. She died from some obscure pulmonary trouble, and the hospital's pathologist (Dr. Whinery) made an autopsy, removing the tubes and ovaries for examination. After their removal he made a section in order to open up the canal, and found, much to his surprise, an almost solid uterine body. The cervical canal was less than an inch in depth, as you will see. The right tube is impervious to the probe. The other tube is patent, and a probe can be passed down to the uterus when it strikes this solid body. Microscopical examination of the body shows that there is no gland tissue there; while a similar examination of the closed tube shows that the tubular elements are present, but that the tube is impervious. The explanation of this strange condition must be that the central wall, formed by the coming together of the ducts of Müller in early fœtal life, failed to be absorbed in the upper portion of the uterus and a solid body resulted. The history we obtained afterward from the members of the family was that this woman had a "show" at the usual time, when thirteen or fourteen years of age, but only once or twice, and nothing had been seen since.

Gangrenous Appendix Vermiformis.

Dr. PETERSON: Mr. O., aged seventeen, a patient of Dr. Gauntlett, Elk Rapids, Mich., who was first called to see the case, December 14th, 1896. He found the patient with a temperature of 102.5°, pulse 120. Abdomen swollen and tender, especially over McBurney's point. The boy had received a severe wrench of the right side while shoeing a horse five days previously. There was severe pain and tenderness in region mentioned for three or four days, but he did not give up work until the day preceding the doctor's visit. Happening to have at this time an operative case at Elk Rapids, I was asked to see the case, and, fully prepared to operate if necessary, drove in company with the doctor twelve miles to the patient's house. During the twenty-four hours since the doctor's visit the condition of the patient had markedly improved. The bowels had moved freely from the cathartics administered, the abdomen was flat, the temperature and pulse normal. There was, however, an area of decided dull-

ness in the region of the appendix, and a rectal examination showed decided tenderness in the left pelvis. Because of the distance of the patient from medical aid, and the severity of the previous symptoms, an operation was advised and accepted. As aseptic an operation as possible was performed in the midst of the most undesirable surroundings and in a poorly lighted attic.

Gangrenous Appendix Vermiformis.

The abdomen was opened with a three inch incision parallel to Poupart's ligament. The presenting bowels as well as the adjacent peritonæum were found to be deeply injected. The appendix was found deeply situated in the pelvis, and upon breaking up the slight adhesions surrounding it pus oozed up into the abdominal incision. As the appendix was drawn out of the incision upon the abdominal walls two fœcal concretions popped out of a gangrenous area which was on the point of rupturing. Pus escaped freely from this opening. The base of the appendix was ligated with silk and the organ removed. The stump was covered with peritonæum and dropped. The abdominal cavity was washed out with large quantities of boiled, strained water and a gauze drain

inserted. The incision was partially closed with interrupted silk-worm gut sutures.

In a letter recently received from Dr. Gauntlett it is learned that the patient has made a good recovery. The gauze was removed in four days, and the wound is gradually healing from the bottom.

DISCUSSION.

Dr. ALEXANDER H. FERGUSON: With reference to Dr. Peterson's paper, the surgical procedure that has been performed by Lauenstein, if I remember rightly, is the removal of the retroperitonæal glands by making a large U-shaped incision and raising the abdominal wall, and then removing the tnbercular glands situated retroperitonæally. Some time last spring I operated on a case which I supposed to be one of chronic appendicitis. I found a cordlike vermiform appendix with slightly pathological conditions situated in and around it. The retroperitonæal glands were greatly enlarged and tubercular in character, which probably had given rise to nearly all the clinical features of the case. I extended the incision, removed a dozen of these glands on the right side retroperitonæally, and I could feel that there were some enlarged glands on the other side, but these were not so markedly enlarged as those on the right side. The young girl made a beautiful recovery. I advised a second operation, but she improved so much and is now in such an excellent condition that she would not undergo a second operation. When we remove tubercular glands on one side of the neck and leave them on the other side, if we resort to constitutional treatment after the first operation, it is sometimes not necessary to operate on the other side, for the reason that there is a tendency on the part of nature to throw off the disease. It may be so in this case.

Recurring Appendicitis.

Dr. JOHN T. BINKLEY, JR.: I want to occupy the time of the Society for a few minutes in speaking of some interesting cases of appendicitis. A few months ago I reported a case of recurrent appendicitis. A year had elapsed from the time the first operation was done, in which the abscess was opened and drained. Hernia resulted from this case from delayed union of the parietal walls, but the patient did not consult me on that account. He had a recurrent appendicitis. Upon making an incision through

the thin wall of the old scar, the appendix, normal in appearance (excepting much enlarged), was found under the incision. I examined the specimen to see if there originally was an opening in the appendix, because at the time of the primary operation there was an abscess cavity. If there was a perforation of the appendix, I could not find evidences of it, and the appendix was much the same as we find in a catarrhal condition.

Last evening I operated upon a patient upon whom I had operated three years ago with the assistance of Dr. Daniel Nelson, and the present attack recurred six or eight days ago. The patient was brought into the hospital with a temperature of 103° with the same general history as before. Originally there was an abscess which I had drained from the flank by means of through and through rubber tube and gauze drainage, and the patient lived comfortably until the present time. This patient also had a small hernia. The scar was thin, and this specimen shows you the condition of the appendix, which I found curled up under the colon. The distal extremity of the appendix lay just where my posterior drainage went the first time. I first encountered the omentum, which was attached to the parietal peritonæum all around the original incision, and had become stretched and formed a hernial mass. This I dissected away, peeled it off from the parietal peritonæum, and removed a mass as large as my hand. I packed around my incision, looked down close to the side of the wound, and saw a discolored mass which I could not at first recognize, lying under and to the right side of the head of the colon. I thought at once that I had found the mass containing the appendix, and by pushing my finger close to the abdominal wall I could slip my finger down under the mass and loosen up the adhesions the same as in a case of pus tubes. I then split it away from the head of the colon. I found, as you see, about one inch of the proximal end of the appendix was normal in size. I packed off all around this area with iodoform gauze, so that I could get a field in which to work, and to prevent the contents of the sac from entering the peritonæal cavity in case of rupture. This precaution was well taken, for I unfortunately ruptured the sac, and from it came half an ounce or possibly more of a thick, grumous fluid, such as we frequently see coming from dermoid cysts. The odor was foul and characteristic of bowel infection. I finally delivered the proximal half of the appendix, which you see toward the mouth of the bottle, and in going a little higher up and more

under the colon, I removed a second piece, the enlarged and gangrenous distal extremity. The appendix which you see was shelled out of a mass of plastic lymph, and is the result of the operation. I found the distal extremity lying at the point at which the tube had perforated the flank posteriorly. The manipulation required, and the extensive dissection I had to make with my finger to loosen up this mass, induced me to again insert a drainage tube in the flank.

I have had two cases of recurrent appendicitis occurring in my own practice, in both of which I have been able to get the appendix a second time, which I did not find during the primary operations, for the simple reason that I did not feel like making a thorough search for them.

This first case made a perfect recovery.

Upon reviewing this paper, ten days after operation, I am able to report the second patient in splendid condition.

A Report upon Thirty Cases of Pelvic Inflammation Operated upon, between July 1, 1895, *and July* 1, 1896, *by Vaginal Incision and Drainage.*

By Amos W. Abbott, M.D.

(See page 104.)

Discussion.

Dr. E. C. Dudley: The essayist is to be congratulated, first, upon having given us a very instructive paper; and, second, upon the excellence of his results. A sharp therapeutic distinction should be made between the two forms of castosalpinx—hydrosalpinx and pyosalpinx. Hydrosalpinx is a less strong indication for radical operation than pyosalpinx. When the diagnosis of hydrosalpinx can be made, the removal of the serum by aspiration may be followed by restoration of the functions of the tubes—*i. e.*, it may be followed by the reopening of its lumen. This would hardly take place when the occlusion had been due to strong adhesive inflammation. It would only be possible when, as often occurs in hydrosalpinx, the adhesions are very weak, or when the occlusion is due to the swelling of the mucosa. Vaginal aspiration of hydrosalpinx, followed by efficient local massage, after the Brandt method, and by such systemic treatment as will increase the patient's resistance to infection, may result in cure.

The results of Landau and others in Europe, and of Henrotin, Abbott, and others in this country have made incision and drainage for pyosalpinx as recognized procedure. The operation, however, even though it produces a systemic cure, seldom restores the functions of the tube, but rather produces complete obliteration of its lumen, thereby converting it into a cord. This is the same result which occurs spontaneously in recurring appendicitis, usually called appendicitis obliterans. It is well known that chronic suppuration of a mucous membrane, even though drained, is most intractable. On the other hand, a parometric abscess surrounded by cellular tissue when emptied naturally closes spontaneously; hence we may expect more prompt and more permanent results in the cellulitis abscess than in pyosalpinx. I have repeatedly incised and drained, however, both forms of abscess, and, so far as observed, with very satisfactory results in the majority of the cases. Failure, however, will occasionally occur. Two weeks ago I operated in a very acute case, and removed by vaginal incision a very large quantity of pus which contained gonococci in abundance and a few streptococci. The patient is not doing well. Her temperature to-night is 104°, and pulse 125. I am afraid that I shall have to open the abdomen after all and remove the appendages.

Unfortunately we do not yet know how to draw the line between those cases in which vaginal incision and drainage is adequate, and those in which a complete cure cannot be obtained short of the radical removal of the uterine appendages. Thus far, however, we must admit that we have been removing the appendages in some cases when vaginal incision and drainage would have been quite adequate. It may never be possible usually to make the distinction before operation. Possibly the future practice may be, first, to drain through the vagina; and, second, to do the radical operation for those cases in which that drainage has proven inadequate. The essayist excludes the radical operation for tuberculous tubes. Will he kindly inform us how he makes the diagnosis of tuberculous tubes before the operation, and how does he know that the tubes which he drains through the vagina are not tuberculous? In very many cases pyosalpinx is tuberculous. If he is to reserve tuberculosis for the radical operation he must make a differential diagnosis beforehand. I think that all cases of sactosalpinx operated upon by any method should after operation or during operation be subjected to bacteriological

examination. It goes without saying that an infected uterus should be given an efficient sharp curettage before the operation is carried to the uterine appendages.

In this connection a certain question arises which, perhaps, some of the enthusiastic hysterectomists may be able to answer. The removal of the uterine appendages, especially if the tubes be taken off close to the uterus, almost always puts an end to the physiological functions of the uterus. Now pathology is only physiology modified by disease; hence, it is a fact that in the vast majority of cases pathological processes in the uterus are interrupted by the removal of the appendages. The same result is also observed as a consequence of the normal menopause—*i. e.*, the menopause, whether artificial or natural, tends to cure inflammation of the uterus. The ultra-hysterectomist declares that when the appendages are removed for septic diseases the uterus becomes a pernicious, pestiferous nuisance, and ought therefore to be removed in every case. Surely obliteration of the tubes—*i. e.*, their physiological removal, which results from incision and drainage of pyosalpinx, ought to be quite as clear an indication for the removal of the septic uterus as the anatomical removal of the appendages. Indeed, the indication, if there be one, for its removal should be even stronger when the tubes are only obliterated than when they are actually taken away, because in obliteration of the tubes the vascular, lymphatic, and nervous connections of the uterus still remain. These, I have just explained, may still preside over its physiological functions, whether those physiological functions be simply physiological or whether they be modified by disease, and therefore pathological. But notwithstanding this stronger indication for hysterectomy, we find that after obliteration of the tubes the once septic uterus usually does no harm. If this reasoning is correct, the uterus is removed too often. Let us not remove the uterus simply because of a certain prejudice against it. There is a classical surgical maxim, "Save what you can."

Vaginal incision and drainage is a reversion to the method of twenty years ago—a method condemned and until recently supposed to be obsolete. Its revival with improved technique and antisepsis now promises in many cases very permanent and useful results. The operation, although in principle more simple, is yet more difficult to perform. It takes a better man to do it well than to open the abdomen and remove the appendages. The great

objections to the operation are: First, the occasional difficulties of hæmostasis. Second, the increased danger of perforation of the bowels. I have recently had two cases of perforation coming on several days after the operations. Third, the difficulty and sometimes impossibility of doing thorough work in the dark. One should always be prepared, if necessary, to open the abdomen. It will not be time to dogmatize on either side of this question until we know more of the ultimate results of the vaginal incision and drainage.

Dr. L. L. McArthur: I wish to say that Dr. Abbott has furnished a conclusive answer to the question as to the removal of the uterus and the rest of the pelvic organs when the ovaries are at fault. He demonstrates positively the value of the swing of the pendulum to the vaginal rather than the abdominal route, in pointing out that of the secret of success of all the vaginal operations is drainage.

When presenting the specimen of myomatous uterus the question as to why Dr. Reynolds did not remove the uterus entirely instead of leaving a portion of the cervix was commented upon, and the remark was made that if he had removed the rest of the cervix he would have established better drainage. The trend of operations per vaginam rather than through the abdominal wall has, in my opinion, been wholly incident to the better results obtained, not from the fact that they operated through the vagina, but because they thus provided ample drainage. The cases presented to-night show that drainage in this situation is sufficient in the majority of acute inflammatory processes in the pelvic organs to induce a subsidence of the inflammatory process. I, for one, am heartily in favor of surgery in the removal of tissues or organs that are hopelessly diseased, but in removing organs that are not diseased I would say no.

Dr. Christian Fenger: I was glad to hear Dr. Abbott's paper, because vaginal incision and drainage for pelvic abscesses is a method I have employed in a great many cases, and with the other speakers I am disinclined to remove a uterus that is not hopelessly diseased. I have only met with one case where I was obliged to remove the uterus for inflammation. In this case I removed the tubes first, and the inflammation extended to the horns of the uterus, so much so as to necessitate three or four months afterward the removal of the uterus. I have never had occasion to remove the uterus in peri-uterine inflammations, and whenever I can

reach the pyosalpinx or its cavity from below I prefer the vaginal to the abdominal method.

Dr. DUDLEY: I would ask Dr. Fenger if he has not encountered cases where the suppuration and involvement were so great in operation from below that he had to go in from above.

Dr. FENGER: Yes, in cases that I could not deal with successfully from below.

Dr. DUDLEY: I would emphasize the fact that we sometimes go in from below, and then find that we have to open the abdomen in order to make a thorough operation.

Dr. FENGER: Or *vice versa.*

Dr. T. J. WATKINS: I have been exceedingly interested in this paper. Dr. Abbott deserves praise for his original work, and congratulations upon the results which he has obtained. A year ago last June I reported before this Society nineteen cases treated by vaginal section and drainage. I reported that three of them continued to have some thickening in the region of the abscess that might necessitate a secondary operation, but perfect recovery has resulted without operation.

I also reported that two of the patients had sinuses. One of these was cured by vaginal drainage, and is now perfectly well. The other patient has had an abdominal section made. I found papillo carcinoma of both tubes. The disease has not recurred, and the patient is now well. Since June, 1894, I have operated at least twenty-five cases of pelvic suppuration by vaginal section and drainage. There have been four deaths, but all of the fatal cases had general peritonitis, and I feel quite certain that they would have died, whatever mode of treatment had been practised.

I have been much interested in the paper Dr. Frankel has recently published. In three years' work he has removed the appendages only about fifteen times for suppurative disease, and he never removes them without first attempting to cure the patient by vaginal section and drainage.

It would seem, as Dr. Dudley has said, that with vaginal section and drainage small pockets of pus are left unopened; but the very smooth recovery from the operation, and the very few relapses after the operation would indicate that this objection is more theoretical than practical. In many of the chronic cases the pus has probably become sterile, and the small amount of it left may do no harm. I think we can follow this procedure now better than we could a few years ago. Then we thought it was very

important not to allow any pus to come in contact with the tissues; now we do not fear contact of pus if we provide for free drainage.

Whenever the abscess is on the floor of the pelvis, I invariably prefer to make a vaginal scetion, but always have the patient prepared for an abdominal incision to be made at the same sitting if I find satisfactory work cannot be done through the vaginal incision.

Dr. E. C. DUDLEY: I desire briefly to recur to a case in point. About two months ago a friend of mine opened a pelvic abscess through the vagina. The patient did not do well. Two weeks later, in consultation, I enlarged the original incision and opened another still deeper abscess. After this the patient did well for a week. Then there was further evidence of suppuration. The doctor, who was an excellent operator, opened the abdomen near the pubes in front of the uterus, and established through and through drainage from the abdominal wall into the vagina. In a few weeks the patient recovered and considered herself quite well. Last week, however, I again saw her in consultation. The temperature was high, and there was further evidence of suppuration. I found a mass in the region of the *appendix vermiformis*, made an incision directly over it, evacuated another pus cavity, and drained. The patient is now making an excellent recovery. This last abscess was undoubtedly due to appendicitis. This was probably the original source of inflammation. The case illustrates the fact that we must sometimes follow up these abscesses and evacuate them as they appear.

Dr. JOHN T. BINKLEY, JR.: As I am down on the programme to defend the subject that, "when operating for septic pelvic disease and removing the ovaries, it is usually advisable to remove the uterus also," and reference has been made to it pointedly in connection with the discussion to-night, there are one or two points I want to refer to. I am glad to hear the evidence presented by Dr. Abbott and other men, for the reason that I profit by what they say. I think, however, that Dr. Dudley, in discussing Dr. Abbott's paper, first objects to the method outlined, and then finally winds up by lauding it.

Dr. DUDLEY: I made no objection to the method at all.

Dr. BINKLEY: I must have misunderstood you then. Dr. Dudley refers to the hysterectomists, and also rather deplores that we have reverted to this method of draining pelvic abscesses after twenty years. Everybody present knows that after twenty

years, or even ten or five years, we have learned from our manipulations from above the anatomical and pathological positions taken by these various abscesses in the pelvis, and that we can therefore much more intelligently go in through the vagina and locate and open these pus cavities. We know just how far we may go with our forceps or fingers to break down these pus pockets, and if we have learned from our operative work from above what we may do, we have gained that much, so that we may revert to the method of vaginal incision and drainage with greater freedom and ease than we could have done at an earlier date. Our operations by this method can be made much more radical. We not only are able to drain an abscess cavity on the side, which may be tubal or tubo-ovarian, or an abscess which has ruptured through the ovary and wall of the tube into the cellular tissue, but we are also able to pass a drainage tube and gauze up against the side of the uterus, and establish free drainage, draining the lymphatic system of the pelvis entirely, in *all* directions and from *all* the organs; whereas, ofttimes in opening the abdomen for the purpose of removing the tubes and ovaries we do not have the advantage of drainage. If drainage is properly applied in these abscess sacs, it will not only drain the tubes, the membranes and lymphatics around them, but also the *uterus.*

Another thing: When operating for septic pelvic disease it is necessary sometimes to remove the uterus along with the tubes and ovaries, because the infection may pass from it and reinfect other tissues. Frequently in dissecting off the tubes we leave broad areas of exposed surfaces on the uterus to which the viscera may attach themselves. We also frequently leave the uterus without lateral support, and it may become displaced laterally or retrodisplaced, so that it is a useless organ, and if the septic disease has existed in the tubes and ovaries, or a tubo-ovarian abscess is plastered down on to the uterus, and it is one side of the abscess wall, I see no good argument in favor of leaving the uterus. I expressed myself in regard to this subject some time ago, and having read the literature thoroughly upon the subject, I find plenty of support for the removal of the uterus at the same time with the pus sacs in septic pelvic disease, and my results have been so much better that I still continue it more or less. Up to the present time I have made a few vaginal incisions and resorted to drainage in these cases. I have employed a method of keeping open my drainage below, by taking a rubber tube larger than this

pencil, an inch and a half in length, splitting it and making a ring of it, sewing the ends together, slipping the ring up into the opening. It rests there by a flange on either side of the rubber tube. It is easily kept open. It keeps up good drainage after the gauze has been removed, and you can allow free drainage of the canal until the cavity collapses.

Dr. Fenger says that he has found pus in the horns of the uterus necessitating a subsequent operation and removal of the uterus. If the pus is found in the horns of the uterus, why would it not be in the lymphatics of the uterine body? Of course no man can take a stand and be directly opposed to methods which our older and superior operators are advocating. He cannot do it in the face of such opinions, but the reasons which I have given I think are well taken.

Dr. HENRY P. NEWMAN: I have been very much pleased with the tabulation of cases presented by the essayist, also his good work and his excellent results. In the main, I am of the same opinion that he is in regard to these cases; at the same time, it is, perhaps, unfortunate to array one of these methods against the other—that is, to go on record as either a vaginal sectionist or an abdominal sectionist. In surgery of the pelvis we should follow the general rules that govern us elsewhere. Whenever we have a pus cavity to deal with, we should attempt to get at it in the most rational manner, resorting to such methods as will insure the greatest safety, preservation of structures, and the best permanent results. In my own work I have always aimed to have the patient prepared for an abdominal section in connection with the vaginal exploration, and I believe this is good practice in all instances, so that when unforeseen complications arise the combined method may be used. Each case is a law unto itself, and I believe it should be treated on its individual merits. I have had many recoveries from vaginal incision and drainage; I have had other cases less fortunate when I was unable to obtain consent for secondary operations. I was prohibited from entering the abdominal cavity from the start. I consider these cases unfortunate, and they not only bring the operation into disrepute, but the operator also.

One word in regard to curetting. If I understood the doctor rightly, he did not curette in many of these cases. I should feel it obligatory on my part to curette in all instances. As to the point of incision or section, I should not confine myself to the pos-

terior cul-de-sac entirely, but be governed by the accessibility of the pus sac.

In reference to Dr. Dudley's point, that the success of this procedure is an argument against extirpation of the uterus whenever the appendages are removed for suppurative disease, we should bear in mind that in the one case we have the organ with its function unimpaired, while in the other, after removal of the ovaries and tubes, the recognized function of the uterus is lost, and with it a possible factor in physiological restoration. For other reasons I am not an advocate of invariable removal of the uterus when the ovaries are to be taken out.

Where the primary operative procedure has been done through the vagina, and a secondary operation by way of the abdomen becomes necessary, instead of adding to the difficulties or seriousness of the laparotomy, I believe it is less difficult and less serious. If the abscess be properly drained it will relieve a great deal of the plastic exudate present, as well as the adhesions that primarily form seriously involving important viscera; consequently I believe that in doing the secondary operation through the abdomen there is less danger and less liability of mutilation—that is, in acute inflammatory conditions, simple drainage through the vagina may often save life and valuable organs, which in the immediate laparotomy would have been sacrificed.

Dr. JOSEPH B. BACON: I am very glad to have heard this up-to-date paper, and I have one case to report which I think is interesting in connection with it. About two years ago a case was referred to me of stricture of the rectum at the junction of its middle and upper third. After thorough examining the patient I saw that it was not an ordinary stricture, but a constriction of the rectum due to adhesive bands, resulting from pelvic inflammation. There was quite a mass of fibrous tissue extending down between the rectum and vagina; the uterus was immovable, fixed by adhesions, and the whole floor of the pelvis was a mass of inflammatory exudate with adhesions. There was a history of pelvic abscess some years previously, the abscess having ruptured into the rectum. There was no fluctuation in the left tube; it was painful, and the patient had been having a rise of temperature, chills and fever for some weeks. On the right side of the pelvis there was distinct fluactuation; the tumor extended on the right side in the median line above the pubes almost half way to the umbilicus. The patient was taken to the Charity Hospital, and

two competent surgeons saw the case in consultation with me. They advised vaginal incision and drainage of the fluctuating abscess in the right side.

Fortunately I was not accustomed to treat pus tubes or pelvic abscesses by vaginal drainage, and determined not to begin with this case, where the swelling or tumor extended so high above the pelvis. I opened the abdomen in the median line, and found the following conditions present: The tumor above the pelvis proved to be caused by firm adhesions of a loop of the ileum and a broad band of omentum to the anterior abdominal wall. Following these structures down they were also adherent to the right side of the bladder and the peritonæal covering deep into the right side of the pelvic floor. The right Fallopian tube was not to be found, only a thin band of peritonæum indicating its original location. The right ovary was firmly adherent to the peritonæum over the side of the pelvis. The fluctuating tumor proved to be due to the loops of ileum that was covered over by the end of the great omentum, both being firmly bound down to the pelvic floor with old adhesions.

The left side contained a pyosalpinx that was causing the temperature and pain. The uterus was firmly attached to the rectum, and the Douglas pouch obliterated by inflammatory adhesions that could not be separated. With the patient in the Trendelenberg position, I called the attention of the surgeons present to the fact that this was one case that no one could have explored from the vagina without rupturing the loop of ileum. There was no route left after the firm adhesions of several years' standing had glued the surrounding organs to the omentum and ileum. We were enabled to free the omentum, but could not free the ileum from its attachments.

Any of you who are doing vaginal drainage will appreciate this case before you complete a list of one hundred cases, unless you select only acute and subacute cases where intestinal and other adhesions are easily separated and the field easily explored.

This patient made a good recovery, and has gained thirty pounds in weight. There is a partial constriction of the rectum yet remaining, but it is gradually improving.

Dr. KARL F. M. SANDBERG: I am very much interested in the paper presented by Dr. Abbott, and think we can all learn a good deal from it. It shows us the harmlessness with which the peritonæal cavity can be opened from below, and suppurating parts handled if we employ gauze drainage. The gynæcological world

is completely at sea at the present time as to what method of treatment to select for cases of pelvic inflammation, whether or not to operate, and by what method we should operate. New methods are proposed almost every week. It is impossible to lay down any rule for all cases; each individual case will have to be treated upon its own merits. We know that a great number of cases of pelvic inflammation recover without operation, even where there is suppurative inflammation of the tubes.

Aspiration is a very valuable remedy in another class of cases. where we find encapsulated intraperitonæal collections of serum sometimes of great size, or where we find smaller pus cavities, generally in the tubes or ovaries, without well-pronounced constitutional symptoms. In some cases we may be able to empty several distinct cavities. I have used the aspirator in many such cases for the purpose of diagnosis or as a preparatory step before laparotomy, but the patients have almost universally declared themselves so much benefited, that the more serious operation could not be considered. In cases of large pelvic or pelvo-abdominal intraperitonæal abscesses not confined to the tube or ovary, the abscess should be opened and drained, I think, from the point or points most favorable for drainage, and no effort should be made to remove any organ. Then come the cases that require removal of the appendages, too numerous to classify here. For this purpose some have favored the abdominal route, some the vaginal, and some advocates of either route favor removal of the uterus with the appendages. Here the proposition is made to remove neither the appendages nor the uterus, but to simply break up adhesions and drain.

Dr. Abbott's paper shows us that it is not necessary in all cases to remove the suppurating organ. The doctor has simply broken up the adhesions of the ovaries and tubes, and evacuated the pus and established gauze drainage, leaving the suppurating walls, we might say, to take care of themselves, with good results. The paper is a plea in favor of more conservative work in these cases.

Dr. Abbott (closing the discussion): I wish to thank the members for the consideration with which they have received my paper. In almost everything that comes up in surgery there seems to be three stages: one in which it is hard to get anybody to do anything; second, a stage in which everybody wants to do everything; and, third, a stage in which the wisdom of certain limitations is appreciated. While assuming that we have arrived at the third stage in the ablative treatment of pelvic inflamma-

tions, and are in the first stage of the conservative method, this paper does not presume to have pointed out a settlement of the question. I have taken no positive ground, but have simply given you such data as have been obtained from my records. We have to add a great deal more before we can come to any absolute conclusion. As the paper states, these cases were operated on between July 1, 1895, and July 1, 1896, giving us only those cases that were operated upon several months ago, so that we might have something to go by as to the matter of recurrence and ultimate recovery. You will have observed from the paper that I have not gone into any theories whatever in reference to vaginal incision and drainage. I have simply given you the facts as near as I could get them from those cases which were recorded and looked after for the express purpose of getting some data on the subject.

In reference to one or two questions asked by Dr. Dudley—for instance, in regard to sacculation in tubal cases, is it not possible that we have been working on a basis which has been indicated to us by our predecessors, rather than looking into these matters for ourselves? I fear that we take things sometimes too much for granted. It has been my experience, after dissecting a good many tubes and making microscopic sections of them, that but once have I found a tube that was absolutely closed microscopically. I have seen them so closed that very little fluid would pass through them. I have seen tubes repeatedly occluded by the folding of the convolutions, but after loosening the convolutions and the adhesions I could pass a probe from one end of the tube to the other. I have done this both post-mortem and during operations.

In reference to another remark made by Dr. Dudley, I do not think surgeons operated twenty years ago as we do to-day. I practised at that time, but I did not operate them as I do now. Then I inserted an aspirator for the purpose of opening abscesses or made a small incision. The vaginal incision, as we do it to-day, is entirely different. It is possible that I was not explicit enough in my description of the operation as it is done by me. First, I make a large incision, so that I can well introduce my fingers; then I proceed carefully to break up the adhesions and peel off the organs from their abnormal situations. If there is a pus tube after I have separated the fimbriæ from the ovary, or wherever it is attached, I pull the tube down into the vagina when it is possible for the purpose of examination, etc. There are cases, however,

where the adhesions are so dense that we cannot do anything with them, and we dare not break them up for fear of injuring the intestines. In some cases I do bring the tubes down and strip out their contents and break up the adhesions sufficiently to leave them patulous.

Dr. DUDLEY: When you curetted the tubes, did you use the sharp or dull curette?

Dr. ABBOTT: I used the dull curette for diagnosis only.

Dr. DUDLEY: I believe in my previous remarks I distinctly stated that we had returned to an old operation modified by improved technique and antisepsis. That is nearly true.

Dr. ABBOTT: In reference to curetting the uterus, a short time ago, having to make a vaginal hysterectomy, I curetted the uterus first, removed it, and then immediately made sections of the uterus, and although I used a sharp curette, and used it as thoroughly as possible, I found that almost over the whole area of the uterus I had not removed all of the endometrium; that there was gland structure left. Now it may be in curetting the uterus we give the glands a better chance to drain. We certainly do not remove all the endometrium. We cannot do it with a sharp curette. We may think we do, but we do not. We do not remove all of the diseased tissue in curetting the uterus. This operation, vaginal incision, should not be done by those who are not familiar with abdominal operations, because it is in doing the abdominal operation that we get our schooling in diagnosis and manipulation. The vaginal operation is a more difficult one by far than the abdominal, and if it is not thoroughly done it might as well not be done. My experience has taught me that it is best not to use any instrument inside of the pelvis for breaking up abscesses. I feel safer without instruments when I have once entered the peritonæal cavity.

In reference to the case reported by Dr. Bacon, where there had been a pelvic abscess which had ruptured into the rectum and formed a rectal sinus from the abscess, I would say that these are the most beautiful cases for the vaginal operation that we have. We can easily incise such abscesses through the vagina and get direct and efficient drainage. In my experience these sinuses so treated have healed rapidly.

There was one point brought out that I would like to emphasize, and that is the effect of a previous inflammation before the present abscess or condition that we are operating for occurs. We will suppose the rectum becomes attached to the posterior por-

tion of the uterus, and a secondary abscess forms which lifts up the uterus and pulls with it the rectum. Now, unless we are exceedingly careful when we go into the cul-de-sac, we will go right through into the rectum.

I would call attention to the fact that I expressly excluded in my paper the cases I would not operate on, and they were such cases as are complicated by tuberculosis, appendicitis, intestinal obstruction, malignant disease, or abscesses which occur above the line, uniting the anterior superior spinous process of the ileum. We cannot reach above this line. That brings me to answer Dr. Dudley's question as to how I know when a case is tuberculous. I know of no means of always making a diagnosis of tuberculosis before operation, but where I have any suspicion or indication of a general tubercular condition or of tubercular peritonitis being present in the slightest degree, I should not operate in this way.

Dr. PETERSON: I believe the doctor states that of the thirty cases reported by him thirteen were of gonorrhœal origin. I would ask him whether he considers them cured of the endometritis, or symptomatically cured.

Dr. ABBOTT: I have not got the data in reference to all of the cases, but some of them are cured. I examined the most recent gonorrhœal case mentioned in the table very recently and carefully, and the patient is entirely cured. There is no indication of a return.

I made these patients promise to let me hear from them every month, so that I might know the outcome of the treatment. Some of them have reported and others have not, but have been visited and examined.

Dr. DUDLEY: Have you in quite a number of cases succeeded in evacuating the pus without invading the peritonæal cavity?

Dr. ABBOTT: In very many of them I have, in others I have not.

Dr. DUDLEY: Do you think the invasion of the peritonæal cavity in the course of evacuating the abscess makes the operation more dangerous?

Dr. ABBOTT: No. I operated on one case last week for pus tube on one side, with a healthy tube on the other. I did not manipulate the healthy side more than was necessary, but there being a tube of pus, as it were, formed by adhesions, extending to the bottom of the cul-de-sac from the abscess above and occupying only half of the cul-de-sac, I had, of course, to enter the peritonæal cavity to get at the abscess.

Dr. DUDLEY: You do not sponge out the pus?

Dr. ABBOTT: Lately I have simply drained, put in more gauze. I have not sponged or washed.

Dr. DUDLEY: Do you not think light sponging gets out a good deal of the pus?

Dr. ABBOTT: In a good many cases it is hard to sponge without going over areas that you do not want to infect—I mean in those cases where there is an open peritonæum.

Dr. MCARTHUR: In a moderately thickened tube, possibly semi-fluctuating, do you break into it with the finger?

Dr. ABBOTT: I separate it from the ovary if it is there attached, and nine-tenths of them are so attached more or less, and then if there is any qnestion about it I get it down into the vagina, take hold of it with forceps and explore it with a probe.

Dr. DUDLEY: Have you tried the anterior incision of these tubes?

Dr. ABBOTT: I have not had occasion to do so, although I have broken up abscesses above the uterus and between the uterus and bladder. I am glad, however, you spoke of that point, as I think it is imperative to make the anterior incision in cases in which there is an abscess which has opened into the bladder.

Dr. DUDLEY: You would not hesitate to incise both anteriorly and posteriorly, would you?

Dr. ABBOTT: No, if I thought it was necessary.

THE PRESIDENT: You irrigated formerly more than you do now?

Dr. ABBOTT: Yes. In the table you will find quite a number of cases that were irrigated. Those I irrigated and those I did not irrigate are so stated.

THE PRESIDENT: In what class of cases did you resort to irrigation?

Dr. ABBOTT: I did not adopt any rule. For the purpose of comparison I irrigated some and did not irrigate others. I did not irrigate where there was no pus.

THE PRESIDENT: Do you irrigate with sterilized water?

Dr. ABBOTT: I irrigated some with bichloride solution and some with sterile water. I irrigate very little now.

Dr. FERGUSON: Were any of the cases acute or chronic phlegmon where you had opened the peritonæum?

Dr. ABBOTT: Yes, and they are indicated in the table.

Official Transactions.

T. J. WATKINS, *Editor of Society*

WHEN, IN OPERATING FOR SEPTIC PELVIC DISEASE, IT BECOMES NECESSARY TO REMOVE THE OVARIES, IT IS USUALLY ADVISABLE TO REMOVE THE UTERUS ALSO.*

By Fernand Henrotin, M.D., Chicago.

The proposition as here set down I take pleasure in endorsing without equivocation, as it coincides with the conclusions which I have arrived at, and which are based upon my practical experience.

The gentlemen who follow me will undoubtedly speak of the physiological functions of the uterus, of its nerve supply, of its intimate relations with the great pelvic sympathetic centres, and of the impropriety of removing it without a true scientific surgical basis for such action. The answer to all these arguments is simple: Removal of the uterus cures many women who, after removal of the ovaries and tubes, were not cured.

This subject cannot be satisfactorily discussed except from a purely practical standpoint, because, like many important innovations, having originated in the endeavor to permanently relieve otherwise incurable conditions, and the operation being comparatively recent, the means by which the cure is effected have not yet been scientifically explained. Any operation which relieves the diseased condition without ulterior bad results is scientific, and when the satisfactory results are once demonstrated, scientific explanations by the score will be forthcoming.

When, twenty-five years ago, Lawson Tait began to remove tubes and ovaries, public opinion, by the very same arguments now advanced against hysterectomy, was arrayed against the removal of these important organs. The cures he effected were, however, his

* Read by invitation. For *Discussion*, see page 176.

justification. His success was followed by wholesale exsections of the uterine appendages by undiscriminating operators. The opportunity thus afforded for the study of diseases of the tubes and ovaries paved the way for work on a scientific basis, and made conservative surgery of these organs possible, so that the mature and experienced abdominal surgeon of to-day is no longer the wholesale ablator of the past.

Scientific hysterectomy may be evolved in like manner.

The vaginal extirpation of the uterus in severe cases of suppurative peri-uterine disease was commenced over five years ago, and from the very beginning it was recognized that patients thus operated upon were completely cured; and the contrast between these women and those operated upon by the abdominal method was very marked. At this time it must be remembered that the abdominal method aimed at nothing more than the removal of the ovaries and abscess sacs, or exudate.

At first more stress was laid upon the method of operating by the vagina as a factor in the cure, because of the downward drainage. It was soon recognized, however, that the removal of the uterus was the most important element in the success of the operation, for when Krug, Baldy and others began to do the same operation by way of the abdomen, their results were nearly as good.

Mutilation is so abhorrent to the true surgeon that unnecessary or imperfectly indicated operation seems a crime, and the performance of hysterectomy would have been condemned by the unanimous voice of the profession long ago had the results obtained not demonstrated its immense value.

The one factor that led, more than all others, to the adoption of this operation, was the frequent failure of salpingo-oöphorectomy to cure the patient.

This fact cannot be denied, and now that patients are cured by this additional operation who were unrelieved by the previous one, it is becoming more universally acknowledged that removal of the tubes and ovaries seldom results in an immediate and prompt recovery.

All who are willing to face this question frankly, and who keep their patients under observation, must acknowledge this fact. During the first few weeks the woman supremely rejoices at having escaped from her close contact with a possible fatality, and, relieved by a long rest in a recumbent or semi-recumbent posture, she is only too anxious to emphasize the dictum of her physician that now she is cured.

When, however, she begins to walk about and resumes her daily

occupation, how often the pains return, and now with the addition of the nervous and circulatory disturbances of the menopause; her anguish lest she be not cured is frequently augmented by the appearance of hemorrhages or excessive menstruation, with possibly profuse leucorrhœa, and all this may continue for months and years.

Any conscientious practitioner who has had abundant opportunities of observing this class of patients, but who does not operate himself, will vouch for the truth of this statement, and the operator himself seldom has the same feeling of security in the permanence of an uninterrupted convalescence which his patient has when she bids him good-bye after the operation.

If the operator be one who does not believe in performing hysterectomy for septic pelvic diseases, let him compare his cases with those in which he has operated for uterine myoma, and in which the removal of the uterus was necessary, and let him bear in mind how much more satisfactorily the latter have progressed.

It is true, as Dr. Etheridge says, that these patients turn the corner after a while, but for some the lane is long before the turn, and for some the turn never comes. This is more common than many are willing to acknowledge, especially those who, when hysterectomy was first proposed, uttered their prejudices too loudly and too publicly.

February 10 I removed a uterus from a woman who had been operated upon a year and a half previously, and who had become a confirmed invalid. The day before I was consulted by a lady who had been operated upon five and a half months ago by one of the most prominent members of this society, and who had suffered so much and bled so profusely that I could hardly persuade her that she would better wait a little longer before having her uterus removed.

February 5 I was called to see a patient upon whom I had operated three months previously for hydrosalpinx, and who was suffering intense pain from two large masses of exudate, one at each cornu. A week later a patient on whom I had performed hysterectomy informed me that a friend of hers, from the same section of country, who had been operated upon by another magnate of this society, and had had something removed from the abdomen (although I knew that something was not the uterus, since this surgeon never removes the uterus save for cancer or fibroid), was about to consult me regarding her condition. About the same time I was addressed by a medical man, who complained that a patient from whom he had removed both ovaries for double ovarian abscess eight or nine months previously, was still suffering acute pain. On February 18 I was consulted by another medical friend concerning a

lady whose ovaries he had removed six months previously, and who had just commenced to bleed profusely. On the same day I went into the country and removed the uterus from a lady who had had her ovaries removed four months before, and who had never ceased to suffer excruciating pain. All these are bona fide cases which I have seen, or in regard to which I have been consulted, within two weeks, and yet many men say their patients do not complain nor return.

Removal of the tubes and ovaries does not always stop the pain, hemorrhage or discharge, neither does it in all instances prevent or retard the growth of neoplasms, and above all it does not abolish the continuance of abdominal nervous phenomena.

Removal of the uterus, on the other hand, if properly performed, prevents recurrence of the hemorrhage and discharges, always destroys neoplasms, unless malignant, usually removes the pelvic pain, and, I am convinced, renders the nervous disorders due either to the disease or to the climacteric infinitely less.

It is not pretended or claimed that hysterectomy is a cure for all ills of flesh, and if a woman's uterus is removed, together with the ovaries, for a condition foreign to these parts, it cannot be argued that the operation will cure her.

Neither is it claimed that uterine castration improperly performed will always be followed by ideal results. The argument here presented is simply in support of the proposition that when the operation is made for septic pelvic disease, and the ovaries must be sacrificed, it is ordinarily advisable to remove the uterus also.

Probably the most conclusive proof of the propriety of hysterectomy in this class of cases is the ease with which the arguments of its opponents can be overthrown.

1. *The operation is unscientific and unsurgical.* This objection has already been answered in my introductory remarks. Tersely put, it is scientific and surgical because it cures.

2. *It is a mutilation, as it involves the removal of an unoffending organ.* The uterus is not an unoffending organ. This is sufficiently proven by the cases in which salpingo-oophorectomy has failed, and in which hysterectomy has been followed by cure. Our opponents claim that the burden of proof lies with us, as the uterus in these cases is presumably a healthy organ. As its removal is usually followed by cure, the burden of proof would seem to lie with them. How can it be determined that the uterus is healthy? In many cases the alteration in the size, shape and density indicates plainly its diseased condition. Or the density of the adhesions of diseased appendages or the exudate to its walls may indicate the necessity of its re-

moval by reason of unavoidable trauma. But even if a uterus is not markedly altered, is it therefore presumably healthy? Is it reasonable to suppose that a uterus which is continuous with and composed of the same tissues as the diseased tubes will remain uninfected? The vast majority of all septic diseases of the tubes and ovaries, whether they have reached these organs by the lymphatics, the veins, or by continuity of mucous surfaces, are secondary to an infected endometrium. Is it reasonable to suppose that they leave behind them a presumably healthy uterus?

Of what use is the uterus after the ovaries have been removed? You will be told that it is a distinct organ, having definite physiological functions. It is not a distinct organ, and after removal of the ovaries has no physiological function of use to the economy. In connection with the ovaries it plays a most important part in relation to child-bearing and normal menstruation, and furthermore, as Dr. Harris states, it acts as an excretory duct for the secretions of the ovaries. After ovarian castration it remains as a malevolent obsolete duct. It is then simply part of an organ, a good breeding-ground for harmful bacteria, lined with a granulating surface conducive to hemorrhage and discharge.

3. *Hysterectomy involves greater danger to the patient than salpingo-oophorectomy alone.* I deny this, and am convinced by my personal experience, and by carefully and without prejudice noting the results of others, that the mortality in large series of cases is not increased by the removal of the uterus. The advantage obtained by the removal of all the diseased tissue, by the establishment of more perfect drainage below, and by the perfection with which the pelvic cavity can be cleansed, more than counterbalances the harm done by the slight additional trauma or the few more minutes required for the operation. Cases may exceptionally occur in which this objection is valid, but they are very rare.

4. *It destroys the equilibrium of the pelvic floor, displaces the pelvic fascia, changes the axis of and shortens the vagina, and thereby tends to produce prolapse of the abdominal viscera and the remaining pelvic organs of the vagina.* This objection may be obviated by leaving the cervix in suitable cases, operated by abdominal section, for it seems probable that the integrity of the pelvic roof will be better maintained under these circumstances than when the appendages are removed and the lateral supports of the uterus impaired. When the conditions render the removal of the cervix imperative, the force of this objection is materially lessened by the severity of the disease. Accidents of this kind are so rare that this objection is of slight practical value.

5. *It unsexes the woman and destroys sexual feeling.* The assertion is constantly made that hysterectomy completely unsexes a woman, and more certainly and promptly destroys sexual feeling than does salpingo-oophorectomy. When a disease is so serious as to demand the complete removal of both ovaries, this objection loses much of its importance, as the prime necessity is the saving of life and the restoration of health. There is reason to believe that this matter has been very much exaggerated. I concur with the opinion expressed by many careful observers that, aside from the sadness occasioned by the knowledge of the fact, women castrated, after the age of full development, in no wise change their disposition or their manner, nor do they lose any of their womanly characteristics. Loss of sexual feeling is a matter of only slight importance except as related to womanly attributes, but that this occurs has never been proven, and most patients deny it with all apparent sincerity. That uterine castration is more serious in this regard than simple ovarian castration is still further remote from proof.

6. *The ablation of the uterus produces a more profound impression upon the nervous system.* The exploiting of this objection frequently affords medical gentlemen gratifying opportunities of displaying their knowledge of the anatomy and physiology of the nervous system in general, and the great sympathetic in particular. Common every-day experience, however, seems to indicate exactly the contrary. One of the most satisfactory results of hysterectomy, which, more than almost any other factor, has led to its adoption, is the markedly diminished nervous disturbance subsequent to the operation.

7. *In very young women, or such as have infantile sexual organs, the operation is said to be followed by involution of the vagina, with atresia.* This is a valid objection, and forms one of the contradictions to the operation.

Before closing, I must protest against the imputation cast up to gynæcologists by both general practitioners and general surgeons in their remarks concerning the habitual performance of hysterectomy. The time for sentiment is prior to the removal of the ovaries. The extent to which conservative operations on the ovaries are performed is probably unknown to many of the gentlemen. A portion of a tube or a bit of an ovary may be all that is required to preserve a woman in her entirety, and then, of course, the uterus is sacred. Again, it may be possible that time will prove that a woman may do much better without hysterectomy when the ovary is allowed to remain, even though the tubes have to be entirely sacrificed. The salvation of ovaries is a matter that needs very faithful consideration,

and the effects upon such patients long after the operation must be carefully noted. It may be that this course will obviate the necessity of hysterectomy in a reasonable proportion of cases, and if so the gynæcologists will greatly rejoice.

This, however, is hardly germane to this discussion, which applies only to that large class of patients whose ovaries are so diseased that they have to be sacrificed.

The answer might also be made that operators who never perform hysterectomy for septic diseases come to look lightly on the removal of the ovaries, being under the impression that the woman is not unsexed as long as the uterus is left. Unless the usefulness of a castrated uterus can be demonstrated, I am of the opinion that it should be removed.

The following may be summarized as reasonable conclusions on this subject, which I believe will meet the approval of surgeons:—

1. In operating for pelvic septic disease, either by the abdomen or the vagina, the condition of the ovaries should be the first object of special consideration, and no part of such an organ, when apparently healthy, should be removed.

2. When the ovaries, an ovary, or a part of an ovary, is left, the uterus should never be removed unless it is the seat of otherwise incurable disease.

3. The removal of diseased fallopian tubes, even in their entirety, is no warrant for the removal of healthy ovaries or a healthy uterus.

4. Even if the tubes and ovaries are entirely removed, the uterus should be spared, if its removal will entail appreciable increase in the danger of the operation to the patient.

5. In very young patients, or such as have what is known as infantile uteri, the uterus need not be removed.

6. In the vast majority of cases when, in operating for pelvic disease, it becomes necessary to remove the ovaries, it is most advisable to also remove the uterus, because it serves no further purpose in the economy, and because it remains a serious element for future harmfulness.

7. When, in operating by the abdominal method, the cervix is found apparently healthy, it is advisable to make a supra-vaginal amputation and to leave the cervix, putting in stay stitches as recommended by Baldy to prevent displacement of pelvic fascial.

With greater experience to be gained principally by examination of ablated uteri, we may learn to distinguish inoffensive varieties, and if so will leave all such undisturbed, for the smallest atom of human flesh which is harmless and does not disfigure, should always be sacred to the surgeon.

PLEA AGAINST HYSTERECTOMY WHEN REMOVING THE OVARIES FOR SEPTIC PELVIC DISEASE.*

By Franklin H. Martin, M.D., Chicago, Ill.

The Creator of the universe reached the acme of His creations when He finished man. There was but one being more intricate for Him to create, and that was accomplished when He set His seal of approval on the finished woman.

Woman, what a marvel of intricate machinery! Clothed in a casement of enchanting mould, which compels the abject worship of man and defies the artistic genius of all human intellect to reproduce in fiction or sculpture!

It was fitting that the Creator should select this, His fittest gem, as the mother of mankind. Intellect of such refinement that the unthinking calls it instinct; purity which protects itself by its own deep light; loyalty to attachments at which man marvels, but cannot imitate; sweet dependence, to which the services of the strong are impelled; unselfish love, of a depth unmeasurable by man and unconquerable by the possessor. And all of these attributes are intimately linked in the human mother with the marvelous organs of reproduction.

The organ which was destined from the beginning of the evolution of protoplasm to accomplish the most precise and highest work of reproduction is the uterus. It is the most marvelous automatic organ of organic life in the economy of mankind. We often forget, I am afraid, that this little organ, without which for one generation humanity would become extinct, and upon the vagaries of which the destinies of nations have been changed, has a most intricate connection by nerve and blood and tissues with the woman in whom it works. And this connection is not of an indifferent type, but is of precisest nature; so that its automatic influence over the being upon which it depends is exacting and commanding. The inter-dependence between this organ and the other organs of the woman, and the other organs and this organ, is the most wonderful thing in the world. It begins its miraculous work at puberty, when menstruation begins, and continues its arduous work until the menopause brings rest. In the interval it brings forth new life, and at each of these times it enacts the acme of earthly mysteries. The marvel begins when the ovum enfolds in ardent embrace the welcome germ of

* Read by invitation. For *Discussion*, see page 185.

male life and finds a fertile nest in the succulent folds of the uterus. At that instant the uterus takes command, and rules with an unerring precision not only the organic life of the mother, but also for nine long months it even modifies and moulds her intellectual, moral and spiritual life.

Instantly, with infinite precision, it telegraphs imperative messages to the principal organs of the body. The heart is called upon to supply more blood; the brain must create hunger in the mother, so that abundant food will be supplied; the menstrual centres are telegraphed to suspend operations; the heretofore dormant breasts are required to make ready that they may become the storehouses in time of imperative demand; the stomach must digest more food; the intestines must assimilate with increased precision. Nor are the immediate environments of this great uterus neglected. It begins building its own walls; it gradually makes soft the hard cartilages of the strong pelvis; it prepares the soft outlets for the inevitable conflict which they must have with its own strong muscles at the time of labor; it enlarges its own bulk more and more, until it forms an unwieldy tumor, but its control is so perfect over the neighboring organs of the abdomen that it accomplishes all this without disturbing the normal functions of one. So, with the mastery of a great general, the uterus commands the whole field, every organ, like a division of an army under perfect discipline, performing its part at the correct time. Day after day the lines of battle are drawn closer and closer, until at a supreme moment it gives the signal which begins the marvel of all its accomplishments—labor. The great muscles of the uterus, which have been developed in inactivity, begin the work of expelling its precious charge; the cervix dilates; the parturient track is filled with a protecting lubricant; the uterus at the proper time calls to its assistance the voluntary muscles of the mother's abdomen, until finally the whole economy of the woman is intent upon the one great act of birth, which is finally accomplished by that last heart-rending cry of sacrificial pain.

Notwithstanding all this, the work of the uterus is not yet finished: the machinery of the support of intra-uterine life, the placenta, must be discarded; the breasts must immediately be prepared to take up the suspended work of nourishment; the uterus itself must begin its rapid work of involution; pounds of its bulk must in a few days have disappeared, an antiseptic fluid furnished for the bruised peritoneal canal, and finally, in an incredibly short period, this wonderful organ, through its automatic nervous system, must again bring itself into normal relations with the organs of the entire body.

Colleagues, these are a few thoughts which come to me in regard

to the organ the fate of which we seek to definitely decide in this influential society on this night. Such thoughts may smack of sentiment when considered amidst the scenes of gaping abdominal wounds, with the red-handed surgeon panting for new conquests under the stimulus afforded by the fumes of human blood; but in the eyes of broad, unprejudiced humanity these thoughts may suggest the question: Is it necessary *ever* to remove the healthy uterus because of disease elsewhere?

My position (and I hope those who know my methods can say that my theory and practice are consistent) may be expressed as follows:—Never remove the healthy uterus for the cure of a pathological condition foreign to it; remove it only for inherent disease, where such disease is incurable by minor means and seriously menaces the life of the patient.

Therefore I should most positively oppose the removal of the uterus in all cases simply because the appendages of both sides are the seat of apparently incurable disease.

First—Because I believe that many of the cases of apparently incurable diseases of the appendages for which said appendages have been sacrificed in the past, could have been cured unmutilated if the execution of their sentence of annihilation had been sufficiently postponed to have given the organs and their allies time, stimulated by rational treatment, to have exerted their own powerful natural reparative capabilities. I believe that the pendulum of pelvic surgery which began with the over-zealous followers of the great Emmet, with their interminable vaginal swabbings, which has now swung in the opposite direction to well-nigh criminal surgery, must find its final legitimate resting place in a middle ground between the two. In the future the gynæcologist must cure his patients by curing their diseased organs, instead of by cutting the organs out, or the human animal will become extinct. Before resorting to hysterectomy in all but the gravest inherent disease of the uterus, exhaust all therapeutic and minor surgical means, giving the patient, too, the advantage of time, which frequently is an important factor in diminishing pelvic pathology.

Frequently, microscopically, and reasoning from analogy, actually the uterus appears absolutely healthy when a septic process has destroyed the integrity of the appendages. Time has given the industrious uterus (through which septic material gained access to the appendages) an opportunity to recover. Here I should remove the appendages thoroughly, excising the fallopian tubes well into the horn of the uterus, a la Watkins. I should fix the fundus of the uterus to the abdominal wall by transfixing it with an artificial liga-

ment of living tissue. I should dilate the uterine canal, curette it with thoroughness and care, render it actually sterile with antiseptics, and leave in it a loose stimulating gauze drain.

I should advise this course first, because in the hands of all but expert abdominal surgeons it is a less formidable and therefore less dangerous procedure. The Chicago Gynæcological Society is one of three great gynæcological teachers of the world. We are giving advice to thousands beside our own members. In every county of this broad land there is an aspiring gynæcologist of local repute, with his small hospital, who operates on all operative cases which will submit to local talent. His experience is often limited to one or two sections a month. Theoretically he is posted because he is a reader, and he reads us. Practically his experience is necessarily limited.

Low mortality in abdominal surgery, everything else being equal, comes with many cases and much experience. The technical difficulties, which can only be accomplished by experience, are much greater in hysterectomy than in simple ablation of the appendages; therefore we should not advise the operation unless much is to be gained which will offset the additional danger. In my opinion nothing is gained by hysterectomy for the difficulty in question over the operation I have described. In cases where cures have been reported following a hysterectomy subsequent to simple removal of the appendages, with failure to relieve symptoms, sufficient care was not exerted in the details of the first operation, or the uterus originally contained inherent disease of a serious character.

Second—In order to be consistent in removing the uterus, when septic appendages exist it is absolutely necessary to remove the whole uterus, including the cervix, because the cervix is a portion of the track through which septic infection was conveyed to the appendages, and just the portion of the track in which the greatest difficulty arises in removing infection, because of its deep glands. The cervix, too, is the portion of the uterus which is most liable to be infected with cancer. This latter fact constitutes one of the strongest arguments employed by the total annihilation wing of this controversy in favor of total extirpation of the uterus.

Total removal of the uterus adds two additional elements of danger to an already formidable operation, viz.:—First, the additional mechanical difficulties encountered in removing the cervix, and, second, the additional danger of infection incurred in making a second opening through the peritoneum, this second opening being into a cavity which it is so difficult to render clean.

The removal of the cervix and the collapsing of the upper end of the vaginal tube, with resultant cicatricial contraction, consider-

ably shortens the vagina. In younger women, where marriage relations must be sustained, this arbitrary shortening of a canal which plays such an important role is bound to interfere materially with the full rounding out of that paramount act of connubial bliss, sexual intercourse. I have examined women after vaginal hysterectomy and abdominal total hysterectomy where due care had not been observed to preserve the vagina, in which that organ had been practically obliterated. Such a result places an awful responsibility upon some surgeon.

Third—There can be no doubt that the nervous phenomena during the convalescence from hysterectomy are far greater than from simple removal of diseased appendages. This is inevitable, because of the almost unlimited nervous communication between the uterus and all other parts of the nervous system, the balance of which is ruthlessly and suddenly destroyed at one fell swoop on the removal of the uterus. The nervous sequela of most serious import, and the one greatly dreaded by our patients, is one which occurs in a small percentage of cases, but in too large a percentage to justify us in ignoring it—the sequela I refer to is mania. This symptom seldom follows simple removal of the appendages, but we dread it as a certain menace in a small but definite percentage of hysterectomies. It is this complication following hysterectomy which induced the great Keith to completely abandon the operation for a time in favor of less dangerous procedures.

Sentiment.—Nor can we ignore that strong sentiment in women which makes them abhor the prospect of losing their most important organ. Sentiment, which is so hard to analyze, wields more influence in all ages than do the most definite facts of the scientist. It will impel a man or woman to follow a tattered flag to the ends of the world, forces a tear at a national song, influences the legislation of nations, shades justice, and annihilates and founds nations.

A scientist may definitely convince a woman that her uterus is a superfluous organ when the appendages are missing; he may convince an old man that his testicles are superfluous, and that the removal of those organs would atrophy a troublesome prostate. Notwithstanding these reasons, not a man in my hearing but that would applaud the old man—that would indignantly resent a proposition of castration, even if advised by the most scientific surgeon living. Why? Unreasoning sentiment.

Then why not respect this sentiment in woman? In young women, in women of all ages? Their sentiment is more reasonable than the old man's. More frequently than with men, their whole lives are wrapped up in the present or prospective duties of matri-

mony and maternity. While the removal of the appendages would blight prospects of maternity, it would not so surely incapacitate her for the other duties of the wife. God forbid that the wily surgeon will ever be able to educate out of woman this holy sentiment.

Let us, too, not only preserve but cultivate that sentiment in man which makes him shrink against the unsexing of our women. Safe surgery at one time nearly annihilated that sentiment among a certain class of enthusiastic surgeons. That in woman which makes her superior to man, which puts into her that something which we call womanliness, that which gives her an affectionate sympathy which we men worship, is that in her which makes her capable of becoming a mother and carries with it maternal instincts. If by removing her maternal organs we do not remove her womanly graces (and I do not believe that we do),we at least are in danger of arousing that wholesome sentiment of which I refer against the unsexed woman in the minds of those she loves.

THE CONSEQUENCES OF REMOVING THE UTERUS.*

By Weller Van Hook, M.D., Chicago, Ill.

In astonishment and delight at the discovery that the womb could be removed with comparative ease and without a prohibitive mortality, almost all surgeons were a few years ago carried off their feet with enthusiasm for the operation, and vied with one another in the honorable effort to reach a low death-rate. Now that the mortality of vaginal hysterectomy has reached a point so low that we constantly expect satisfactory results and are surprised when they fail us, we must turn our attention with especial interest to the inquiry as to the indications for the operation, and particularly to its applicability to conditions other than progressively destructive disease. The intrinsic value of the uterus to the economy deserves especial thought when it is proposed to extirpate that viscus for suppurative conditions and for neuralgia.

Physiologists are in the habit of extirpating the various viscera of the lower animals in order to study the value of the excluded organs by observing the post-operative conduct of the victims.

Although the experiment of removing the human uterus has been performed in the course of treating disease in a very large number of cases, the recorded observations of the findings, mechanical and physiological, are very few and widely scattered. It would

* Read by invitation. For *Discussion*, see page 176.

seem, therefore, that hysterectomists are still too much interested in their operative technique and in their mortality rates to sacrifice the time required to consider minutely the comparatively minor details of the remote consequences of their activity.

If we could imagine the uterus and its adnexa removed by the vaginal route and without the necessity for resorting to any hæmostatic device or manœuvre which would either bring about necrosis of the tissues or leave a foreign body, we would still have a number of mechanical consequences of our work which would not be wholly insignificant.

To most of us would probably first occur the change in the relations existing between the bladder and rectum. These viscera are usually separated from one another in the adult by the vagina below and the uterus above. But inasmuch as both rectum and bladder are hollow organs, and are by nature adapted to a wide range of alterations in position and distension, we are forced to the conclusion that under the hypothetical conditions they would suffer less from the mere absence of the womb than from the effects of adhesion to one another instead of to the mobile uterus normally interposed as a buffer between them. These adhesions may be sufficiently broad and dense, in cases of hysterectomy performed for extensive disease, to give rise to really important disturbances.

Of much greater practical importance are the changes which, in all cases, take place in the uterine ligaments. When the uterus is removed these ligaments contract strongly, partly by virtue of their elasticity, partly on account of the contractility of their muscular fibres. The ends of the ligaments are, however, drawn into the plug of cicatricial tissue which in practice is always formed, and are thus put in mechanical communication. In the technique of vaginal hysterectomy, in which, as a rule, no provision is made for approximating the broad ligaments, this is the only mode by which these important supporting structures can mechanically communicate with each other and resist the intra-abdominal pressure. (Prof. E. C. Dudley, of Chicago, has informed me that he has for some time been in the habit of drawing the broad ligaments into the vagina, after removing the uterus, and fastening them into position there by means of sutures. In this way the vagina is well supported.)

The late contraction of this cicatricial plug, plus the retraction and readjustment of the ligaments themselves, no doubt suffice almost always to restore the so-called pelvic roof to a condition almost resembling its normal integrity.

That the removal of the uterus is regarded as equivalent to a diminution in the textural area of the pelvic roof and an abbreviation

of the powerful broad ligaments, is shown by the fact that hysterectomy, together with other procedures simultaneously practiced, is by many regarded as a legitimate operation for complete procidentia, some surgeons making an especial effort to shorten these ligaments or to approximate them by sutures after the removal of the uterus, particularly when, as in abdominal hysterectomy, the parts are easily accessible.

The absence from the literature of reports of hernias following vaginal hysterectomies is partly to be accounted for by these changes in the cicatrix and by the readjustment of the pelvic roof to the new conditions, but also by the fact that intra-abdominal pressure is here exerted at an acute angle to the plane of resistance.

None denies the shortening of the vagina, especially after kolpohysterectomy, since a portion of the tube is usually removed as a systematic part of the technique. The enthusiastic advocates of the operation deny that the amount of shortening that results when the operation is done for non-malignant disease has any important bearing upon the functions of the remaining viscera, or upon the sexual function of the vagina itself.

The importance of the actual shortening of the vagina would be less if the direction of the tube were not at the same time altered so that it takes a position more nearly parallel to the axis of the pelvic inlet.

In a purely theoretical consideration of this subject injury to surrounding structures during operation, especially to the bladder and ureters, the rectum, the sigmoid and the small intestines, might be left unconsidered. But in such a practical discussion as is the present these injuries, now fortunately very uncommon with experienced operators, must be regarded as among the risks involved in the operation.

Similarly the inclusion of the ureters in contracting cicatrices may be a consequence of the disease which necessitated hysterectomy, or it may be a direct result of the operation itself.

The consequences of removing the uterus thus far noted have been almost wholly mechanical.

The more immediately physiological results remain for discussion. Dr. Dudley has called attention to the effect of hysterectomy upon the pelvic tissues considered as the so-called pelvic diaphragm.

It is certain that removal of the uterus with the appendages is highly injurious in undeveloped girls and has not, I believe, been questioned. The imperfect evolution of the external sexual characters, together with the social penalties which follow, have stayed the hands of enthusiastic advocates of hysterectomy under these conditions,

so that among the few well-established contra-indications to hysterectomy stands the imperfect physical development of the patient.

In a small number of recorded cases atrophy of the vagina has followed hysterectomy. We have as yet no data which will enable us to predict its occurrence.

It is certain that the removal of the uterus with the appendages is highly injudicious in undeveloped girls, and has not, I believe, been questioned. The imperfect evolution of the external sexual characters, together with the blasting social penalties which follow, have stayed the hands of the most enthusiastic advocates of hysterectomy under these conditions, so that among the few well-established contra-indications to hysterectomy stands the imperfect physical development of the patient.

That the disagreeable phenomena attending the menopause after hysterectomy are more severe in character, or more prompt to occur, has thus far, I believe, not been demonstrated.

The result of leaving one or both ovaries after removing the uterus has not been widely discussed. In one of my own cases of hysterectomy for carcinoma one of the ovaries was left, together with a portion of a tube. The woman has not ceased to menstruate regularly, although about five years have elapsed. A slight discharge takes place from the tube, which is implanted in the vaginal cicatrix.

The uterus is removed and the ovaries left in place by French surgeons not infrequently. Where the uterus is sufficiently diseased to warrant its removal, but where one or both ovaries are normal, it would seem that this would be a legitimate surgical resource, especially in view of the disturbances of the menopause, which are often sufficiently serious to constitute of themselves a serious drawback to the comfort and happiness of the patient.

The attention of the profession has been of late called to the sufferings of patients in the post-operative menopause. F. Jayle states that he has carefully followed the cases of one hundred women after oöphorectomy, and that it is the rule to see women have trouble with the phenomena of the menopause after castration.

Such has been my own experience, especially in the case of women who have expected a number of years to elapse before the normal menopause.

For these victims of our imperfect art ovarian feeding has been devised, somewhat empirically, with results which are still *sub judice.*

The plastic work of A. Martin deserves a much higher place in our surgical therapeutics since, just as we would endeavor to save

the stump of a diseased hand, so we should here try to preserve the remnants of one or both ovaries, or of the tubes.*

The effect of removing the uterus and its appendages upon the morale of a woman may be *nil*, or it may be enormous. We are forced by the present limitations of our physiological knowledge to reduce as many of our problems as possible to their lowest terms. We are often obliged to leave out of count the mentality of our patients, and to ignore to some extent the effect of our work upon parts remote from the seat of disease. But it must be admitted by every fair-minded man that many a woman falls into despondency or apathy after the removal of these organs. The cavillers in and out of the profession have found no subject more to their taste than that of oöphorectomy and its abuse. The ill-effects upon the patient's morale which they have been able to cite as consequent upon oöphorectomy apply with equal force to hystero-oöphorectomy.

But entirely aside from the purely mental changes that take place after hysterectomy, we must remember that the non-pregnant uterus, though a small viscus, is upon impregnation capable of a development and an augmentation of function which no other organ can equal. The unimpregnated womb must contain in its tissues all these possibilities in a latent or akinetic form. Its motor, sensory and sympathetic nerves and its ganglia must stand in very free and easy communication with the great nerve-centres of the body. And large and important avenues of nervous communication have been demonstrated as a matter of fact. Exactly what part of the great systems of nerve fibrils in the spinal cord allotted to the transmission of sensory, motor and reflex impulses belong to the uterus itself is not as yet known. Nor do we yet know what becomes of these paths of nerve force when the organ they serve has been removed. We do know, however, that when one of the lower extremities has been amputated, important changes follow in those parts of the cord through which those fibres pass which supply the lost member.

To me it is inconceivable that when the uterus is removed important changes in the nervous system—cerebro-spinal as well as sympathetic—should not occur. And I am confident that when careful and minute examination of the nervous system is in future made after hysterectomy, profound structural changes will be found to have taken place, changes which will account for the functional disturbances already referred to.

* Martin has lately published in Monatsschrift fuer Geburtshuelfe und Gynækologie, January, 1897, the report of a most interesting case of tubal pregnancy, in which the tube was opened by incision after preventive haemostasis by temporary ligature, a coagulum removed, and the opening in the tube closed by a line of sutures.

To be sure, these extensive nervous connections favor the transmission of evil influences as well as beneficent ones, and the advocate of hysterectomy in all cases of salpingo-oöphorectomy would say that this very richness of nerve-supply is reason for removing the organ.

The whole contention that the uterus should be removed whenever its adnexa are gone is only a temporary makeshift—not in the line of true progress. Its advocates say: "The uterus without its adnexa is a useless organ; some patients whose tubes and ovaries are removed are not relieved from pain; hence all uteri whose adnexa have been removed should be extirpated."

For my part I am not as yet convinced that the uterus is a *wholly* useless structure when its appendages are gone. The extremists have not proved this premiss.

Besides, those patients not relieved after salpingo-oöphorectomy are patients who have some morbid condition remaining. Our effort should be to find out what these morbid conditions are. I ask the hysterectomists for a diagnosis.

In a recent case of acute exacerbation of a chronic salpingitis I removed the adnexa by laparotomy. The patient made a good recovery from the effects of the operation, but had intense neuralgic pain apparently about the right horn of the uterus. I believed that the ligature about the stump of the tube was making pressure on a nerve fibril. But as I could not be sure the trouble was not in the uterus I did a hysterectomy. The patient was freed from pain at once. I still believe the pain was a true neuralgia, especially as simple micro-technical methods did not reveal any disease of the uterus. Hence I plead guilty to a technique in the first operation which is not ideal—applying a small mass-ligature instead of isolating the vessels and ligating them separately. This case does not convince me that all uteri should be removed to prevent their giving rise to pain.

No sane and well-informed man now objects to the removal of the uterus together with its appendages if malignant disease is present. In that case all minor considerations give place to the life-saving purpose. But our ignorance as to *all* the consequences of hysterectomy may well give us pause when we consider the operation as applied to "pelvic suppuration" and to neuralgia. It seems to me we ought, at least, to limit our indications within the realm of pelvic suppuration, and curb our enthusiasm until the advocates of extended indications answer the following questions, which might, by the way, be equally well answered from observing cases hysterectomized for carcinoma:—

1. What has been the condition of the pelvic viscera for the first

five years after hysterectomy, and how have their functions been performed?

2. What changes in the general physical condition have been noted during this period?

3. What alterations in the functions of the nervous system have been noted, and how has the loss of the uterus affected the social attitude of the patient?

4. In the case of those hysterectomized patients who have died of diseases other than pelvic, what have been the post-mortem findings, especially in the case of the nervous system?

The burden of proof lies with the advocate of hysterectomy. If he does not show us a lower mortality rate than laparotomy gives us in pelvic inflammatory lesions he must show us very much better permanent results.

If the school led by Péan, Richelot, Ségond and Jacobs limited their energies in hysterectomy to a category of diagnosticated diseases I would certainly have less to make objection to. If, for example, hysterectomy were proposed for tubercular and actinomycotic salpingitis with sinuses leading in various directions the contention would be reasonable. We would perchance follow. We might remove the uterus for acute suppurative lymphangitis of the organ.

If it were said that suppuration about a lithopædion or about the bones of a fœtus outside the uterus, or about a fibroid or a dermoid cyst, might sometimes be best attacked by first removing the uterus, we might agree and occasionally report such a case. But the Gallie hysterectomist casts dust in our eyes when he says, let us remove the uterus for "pelvic suppuration," and thinks to escape criticism while we are occupied with photophobia. The whole question of whether we cut out an important organ or leave it by resorting to other surgical measures brings to mind the question of what is meant by "pelvic suppuration." This expression is no more a diagnosis than is "ascites," or "dyspnœa," or "leucorrhœa." The argument is confused amongst all the nations by the failure of the originators of the operation to give it a proper name. If they would specify under exactly what diagnosis we are to remove the uterus much argument would be avoided. We should not discuss hysterectomy as a cure for pelvic suppuration, but rather discuss the different forms of intrapelvic inflammation and their appropriate management.

I must agree with Landau, of Berlin, who is himself a skilled hysterectomist by the elegant methods of the Parisian operators, when he says: "I have the firm conviction, which I have obtained from statistics, that our honorable colleagues in France and Belgium make a great many hysterectomies in abscesses where we perhaps

reach the goal with the aid of incision, and that cases are operated upon there which are perhaps nothing more than parametritis posterior serosa adhesiva and such like—*i. e.*, cases which in no way are to be classed under the diagnosis of suppuration, to say nothing of complicated pelvic abscesses."

Pozzi, who was present at this meeting of the Berlin Gynæcological Society, agreed with Landau, and stated that the transperitoneal method remained for him the route of choice.

It must be admitted that the value of the uterus after the removal of the ovaries, which are the essential organs or generation in the female, does not seem very great. But it is difficult to see why a normal womb should be excised after oöphorectomy, which we know is followed by atrophy of the uterus. The statement that the uterus under such circumstances "is a dirty hole" is not argumentative. For my own part, I feel justified in removing the uterus (1) when it is the seat of disease otherwise incurable; (2) when at the time of performing salpingo-oöphorectomy it is in such a state of chronic inflammation as to make it appear probable that the strongly atrophying influence of oöphorectomy will not do away with the painful condition; (3) when the abdominal route to diseased tubes and ovaries is contra-indicated and when hysterectomy would seem to offer better facilities for their removal and for drainage. In other words, I shall in each instance ask myself, so long as the evidence stands as it does to-day, why I remove the uterus, and shall accept for reply only such positive answers as I would accept for a spleen or for a kidney, and shall not take refuge in the general fear that the patient may not be well if any part of the sexual apparatus is left.

Progress in gynæcological surgery cannot, I feel, be different from progress in the surgery of the extremities, in which we have learned to save fingers and toes, as well as whole limbs; or different from the surgery of the joints, in which we have almost abandoned destructive excisions. The arguments must indeed be cogent which will induce us to extirpate any structure which we cannot demonstrate to be diseased. The vaginal route for reaching the uterine appendages and treating them surgically, a route which was advocated and used by two of our most distinguished fellow-countrymen, Thomas and Henry T. Byford, long before the present popularity of this avenue, must in future be used for a variety of reasons, the chief of which is that by it we do not so seriously expose large peritoneal areas to injury and infection. Fortunately we do not always need to remove the uterus in order to expose and treat the structures above it. So that the general popularity of the vaginal route is likely to increase, and will not long suffer from the rash advocacy of hysterectomy which is now the vogue.

A PLEA FOR RETENTION OF THE UTERUS IN REMOVING THE ANNEXA FOR SEPTIC DISEASE.*

By Alex. H. Ferguson, M.D., Chicago.

The uterus has an anatomical function after the appendages are removed. Like a suspension bridge, with its supporting ligaments, it efficiently supports superincumbent weight. It is not correct to say that it has nothing whatever to do with the integrity or support of the vaginal vault. Sagging of the pelvic floor is not always the fault of the uterus, and when it is the cause the condition can be prevented or rectified without removing it. If found too heavy or displaced at the time of operation, it should be sutured to the abdominal wall. In discarding an old operation for a new one the primary considerations should be overwhelmingly in favor of the new one. Is the treatment of septic infection of the ovaries and tubes as practiced to-day efficient and satisfactory? Double salpingo-oöphorectomy is a safe operation and cures the vast majority of cases. Its mortality is not more than five per cent. Of my last one hundred cases I lost four. Any one who has uniformly bad results with it should look more closely to his technique; discard silk; amputate the fallopian tubes at the cornua of the uterus, curette the uterus, leave it in a good position, repair the cervix when necessary, and drain through the pouch of Douglas by opening it its full width when necessary. The claim made that drainage is better when the uterus is removed I dispute. The mere assertion does not substantiate their ground. The common experience admitted by all is that the removal of the appendages alone cures the patients pathologically, but symptomatically all are not relieved. The opprobrium of the healing art deals with the ablation of structures and organs that are impaired by disease beyond the hope of recovery by any other known means. An operation is not in this connection a therapeutic agent, but a means of separating the dead from the living, and the abnormal from the normal. If the uterus is normal or curable by other means, why should it be extirpated without at least giving it the benefit of the doubt, should one exist?

The profession generally are being awakened to the fact that operators needlessly remove ovaries and tubes to cure symptoms referred to the pelvic organs. Howard Kelly ("Annals of Gynæcology and Ped.," January, 1894) said 15.5 per cent. of the last two hundred

* Read by invitation. For *Discussion*, see page 176.

cases sent him for operation had no pelvic disease. This is common with all of us; but Williams ("New York Journal of Gyn. and Obstet.," August, 1893), a pathologist, examined three hundred ovaries and tubes removed by five different operators and found absolutely no anatomic ground for removing at least sixty of them. In France this form of practice appears to be more common than here. Laying all such evidence aside, we cannot but admit that in a considerable percentage of cases giving a history of gonorrhœal or puerperal infection, we are not sure of our diagnosis even when examined under anæsthesia, and it is not until we open the abdomen and handle the bare organs that a decision is arrived at whether they should be removed or not. Even then, sometimes, we are in doubt on account of the little macroscopic changes observed. Under these circumstances quite a few normal ovaries and tubes are being sacrificed every day, not, I believe, with the intent of mutilation, but having the long suffering of the patient in mind the surgeon is ardent to do something substantial for her. This points out the necessity of exhausting every curative measure before opening the abdomen. I have seen the uterus, tubes and ovaries extirpated for a supposed pyosalpinx, and afterwards not a trace of disease could be found. This is not liable to happen with the experienced abdominal surgeon well versed in pathology and general medicine. The points I wish to make are (a) the difficulty, even when the abdomen is opened, of telling whether the tubes and ovaries had better be removed when sepsis had been at work, on account of these organs sometimes recovering themselves. A number of infected cases do get well, and (b) when a doubt exists regarding the adnexa, how much more difficult it is to tell what uterus will or will not recover itself or by after-treatment.

The surgeon who makes up his mind to remove the uterus because the tubes and ovaries are hopelessly diseased will ablate many a normal uterus on acount of the difficulty of making an accurate diagnosis of the amount of damage, if any, that organ has eventually suffered from the infection. In my experience one class of cases not completely relieved of their symptoms after salpingo-oöphorectomy had comparatively little changes pathologically, but had marked neurotic disturbances. It is my opinion that these cases would not obtain any additional relief were their uteri removed. A case came to my clinic a short time ago whose ovaries and tubes were (according to her story) removed for disease without relief, then her uterus was condemned and cut out. But here she was complaining of the same old symptoms and asking for another operation.. Some cases get what we might call the "operation habit," and are anxious to go under the knife at any time. I do not consider it a very bold thing

to assert that even the most radical and sweeping operations on the uterus and appendages will not symptomatically cure certain cases of septic pelvic disease. It must be remembered that afferent nerve impulses will be carried by the remaining structures, and that sometimes the messages are efferent when the contents of the pelvis are not at fault at all. A microscopic examination of the material scraped away from the uterus does not help us in cases of pyosalpinx in determining whether hysterectomy should be done or not, unless there be recurrent polypi, or some condition foreign to the septic infection. A diagnosis of a tender, enlarged, or displaced uterus is not a sufficient reason to recommend a radical operation. Sub-involution is usually the paramount cause in these cases, and the endometritis or metritis only of secondary consideration.

Atrophy of the uterus follows castration sooner or later. There is abundant clinical proof of this, and it is supported by the laws of nutrition governing other tissues and organs of the body when the blood supply and innervation are interfered with by accidents or experiments. Solokoff's (Arch. für Gynak., Bd. 1, H. 2, 1896) experiments are very interesting and conclusive on this point. He favors the theory that the atrophy follows the disturbance of nutrition in the uterine tissue secondary to extirpation of the ovaries on account of interference with the innervation, vasomotor or trophic centres, in the ovaries themselves. Be this as it may, when the normal stimulus of ovarian influence is suspended by the climacteric or by castration, the regular rhythmic contractions cease, and muscular atrophy results. The endometrium is not so much influenced by this phenomenon. It is supposed to be presided over by a special nerve centre, which is an additional reason for thoroughly treating the interior of the uterus during and after removal of pus tubes and ovaries. It is claimed by the supporters of the radical operation that chronic endometritis prevents uterine atrophy after castration, but they have not shown this to be the case. On the contrary, we can point out that the natural result of endometritis and metritis with uterine hyperplasia, etc., even when left alone, is for atrophic changes to occur, which are hastened by the natural menopause and not infrequently effect a spontaneous cure, and these changes are also favored by oöphoro-salpingectomy.

That inflammatory conditions of the uterus are greatly benefited by the removal of the pus tubes cannot be denied. The prognosis of the uterus should be considered from the standpoint of the etiology of its disease. In acute septic puerperal endometritis and metritis, producing more or less septicemia and the symptoms not abating, with curettage and douching and endangering the life of the woman,

immediate hysterectomy is demanded. Puerperal metritis is often gangrenous and very fatal, to counteract which a radical operation is called for. A less degree of pyogenic (staphylococci and streptococci) infection occurring after early abortions, use of the sound. trauma, etc., causes chronic purulent endometritis. It is often amenable to treatment. "Conception has taken place five days after a curettage for purulent endometritis" ("American Textbook of Gynæcology," p. 234).

The prognosis in acute gonorrhœal endometritis is more favorable. Sloughing does not take place. The gonococci do not readily extend into the mucosa or lymph spaces, but remain on the surface, occupy the follicles, and are found beneath the epithelium. I do not know that a fatal case of primary gonorrhœal endometritis has ever been reported. The uterine mucosa offers a marked resistance to the gonococci, which are more at home in the urethra and vulvo-vaginal glands; hence true gonorrhœal corporeal endometritis is comparatively rare. A mixed infection is more common. Although Madlener (Mercredi Med., 1885, No. 41, p. 487) and others have shown that the gonococcus of Neisser is capable of penetrating muscular tissue from the endometrium in puerperal cases, causing parenchymatous metritis, still it soon dies in or passes away from the muscular tissue, but remains for years in mucosæ if not very thoroughly treated. It appears to me that the profession can concur in the opinion that after removal of pus tubes hysterectomy is not indicated for endometritis alone, whether septic or specific in origin. This brings us to the real bone of contention, the inflamed uterus itself. There is a chronic metritis. What should be done to it? Tait says ("Diseases of Women and Abdominal Surgery," p. 123): "One might almost say in ninety-nine out of every hundred the chronic metritis is accompanied by and directly due to sub-involution of the uterus after labor or after miscarriage." On page 123 he says, regarding sub-involution, that "ninety per cent. will yield to this treatment (previously mentioned), and the rest will yield to the curette and cautery."

Martin ("Diseases of Women," p. 243), in speaking of chronic metritis, says: "The uterus undergoes involution, the chronic metritis gets well, and very often there is obtained by this means (amputation of the cervix) not only relief from the immediate suffering, but also a very favorable effect on the general condition. The women bloom again, and recover health and complete ability to perform their duties." "In the case of a reasonable patient, who appreciates what is at stake and is anxious to regain her health, it may be regarded as favorable" (Thomas, p. 322). "The treatment of the two

conditions is identical"—that is, metritis and endometritis. ("Amer. Textbook of Gyn.," p. 241).

"Whatever may be the explanation, the fact is undeniable that the volume of the uterus diminishes after every operation upon its neck, as I have often observed after the operations of Simon, Schroeder and Emmett" (Pozzi: Chapter on Chronic Metritis, p. 206, Vol. I., "Med. and Surg. Gynæcology"). This has been my experience.

Castration as a means to cure chronic metritis with hyperplasia was recommended and successfully practiced by H. Fritsch (Deut. Chir., Leip., 56, p. 343). Péan claims (Gaz. des Hop. 1886, p. 1170) to have had better results with vaginal hysterectomy for chronic metritis and not removing the ovaries when these were not inflamed.

To my mind Thomas gives about the proper prognosis in chronic metritis.

In speaking of sequelæ of the removal of ovaries and tubes, Lucas-Championnière says that pain persisted in only eight per cent.; pyosalpinx cases gave best results, pain always ceasing; catamenia persisted in twenty-two per cent. The number of cases for data, 268 (Pinesse, ii. F. 77, 78). Many of the sequelæ are caused by not properly caring for the patients before and after operation, or, indeed, to the bad technique of the operator.

In discussing a paper on "Vaginal versus Abdominal Section for Pus in the Pelvis" ("Medical News," November 21, 1896), Dr. L. S. McMurtry says that the sacrifice of the uterus in the majority of cases of suppurative pelvic inflammation is unnecessary. While there are undoubtedly puerperal cases with suppurative pelvic inflammation, where it was necessary to remove the uterus, it was not so to such an extent as to make it a rule that this organ should be taken out. Surgery should be confined within the limits of removing only such diseased tissue or organs as are necessary for complete cure.

Dr. W. E. B. Davis says that total ablation of the uterus and its adnexa is unnecessary in many instances in which it is practiced by some surgeons.

Dr. Louis Frank ("American Gynæcological and Obstetrical Journal," Vol. IX., p. 450) says that vaginal hysterectomists tell us that in all cases of bilateral disease the uterus should be removed, as without the tubes and ovaries it is a useless organ, capable of doing much harm, and so long as it remains the patient will never be permanently cured. This, however, in his opinion, is a fallacy. If the uterus is practically normal, if it is not in a septic or diseased condition, there is absolutely no indication for its removal. There would be just as much reason, if removal of the testicles became nec-

essary, to remove a man's penis to effect a permanent cure for double orchitis. You might as well remove the appendages in all those cases where it was necessary to curette the uterus for a septic endometritis; the indications are just as plain as in many where the opposite exist. As a matter of fact, if the uterus is not in a septic condition, and even if it is septic, so far as the endometrium itself is concerned, which latter may be relieved by curetting at the time of the abdominal operation, we will find that with the tubes and ovaries completely removed, an artificial menopause being brought about, the organ will undergo the same retrograde changes that we find occurring at the climacteric. Men who have failed to get good results by abdominal removal of the appendages with a normal uterus have done so on account of lack of proper technique.

Dr. Reuben Peterson, in an article entitled "Treatment of Pelvic Suppuration by Abdominal Section Without Hysterectomy" ("American Journal of Obstetrics," Vol. 34, 1896, p. 31), says it is not good surgery to establish a universal rule that whenever the appendages are removed for bilateral inflammation the uterus also should be sacrificed. The interests of the patient are paramount. To his mind it is simply a begging of the question, an intellectual shirking of a difficult surgical problem, to adopt a universal rule that the uterus should be removed whenever both appendages have been sacrificed. Polk and others claim that the uterus under these conditions is a useless organ, and should therefore be sacrificed, because *some* cases fail of cure without this additional procedure.

We have passed beyond the developmental stage of hysterectomy. The operation has been so perfected that in the hands of experts the mortality is not increased over that attendant upon bilateral salpingo-oöphorectomy. On the other hand, so much better, in his experience, is the convalescence in cases where the uterus has been removed that it is a temptation to do so in every case. But the conservative surgeon must needs hold his hand. We should not talk too lightly about this functional uterus after its appendages have been ablated. There is a possibility that its importance and influence over other parts of the body is but little understood at the present time, and that future investigations will make us repent having sacrificed the organ except for the strongest pathological reasons.

There are but four classes of cases where he would consider it justifiable to remove the uterus when both appendages have been sacrificed for purulent disease:—

1. When the uterus is so diseased that less radical procedures than hysterectomy probably will fail to relieve the patient of subsequent suffering.

2. When the appendages are tubercular. In these cases we are dealing with a serious disease, which should be treated by the most radical measures.

3. Where the peritoneal covering of the uterus, and even the body of the organ itself, has been badly injured by the enucleation of the purulent appendages. Here the danger of subsequent bowel adhesions and intestinal obstruction might decide one to perform hysterectomy.

4. In some bad cases of pus tubes it may become necessary to remove the uterus for the purpose of securing free vaginal drainage.

In all other cases he would advocate a thorough curettage and retention of the uterus.

Dr. L. H. Dunning, in a paper entitled, "Shall Hysterectomy be Performed in Inflammatory Diseases of the Pelvic Organs?" ("American Journal of Obstetrics," Vol. 34, 1896, p. 499) says that hysterectomy in inflammatory disease of the pelvic organs resulting in suppuration is sometimes indicated will be generally admitted, but that it is the preferable method in the larger number of cases few will at present claim. That in proper cases the extirpation of pus tubes, neoplastic and suppurating ovaries, neoplastic and suppurating uteri, are life-saving operations, none will deny; but that in inflammatory diseases of these organs all of them should be sacrificed because one or two of them are diseased is unscientific, unsurgical, and morally wrong.

He opposes hysterectomy, as a rule, in inflammatory diseases of the pelvic tissues upon the following grounds:—

1. The uterus is the central organ of the reproductive system, and should not, except for palpable and urgent cause, be extirpated.

2. It is only in rare cases that the uterus is so far diseased as to resist the curative effects of appropriate treatment.

3. The removal of the uterus profoundly affects the nervous system and emotional nature of young women deprived of this organ.

4. We oppose the removal of the uterus from anatomical reasons, to wit: As a result the vagina is shortened, the anatomical relations of the bladder, sigmoid and rectum are changed, the elasticity of the pelvic diaphragm is greatly diminished or entirely removed, the elastic tissue being largely replaced by sensitive scar tissue.

5. In married women it often disturbs the sexual relations of husband and wife, and is apt to induce mental depression.

6. Vaginal hysterectomy compels the use of drainage because of the necrosis of tissue and suppuration induced.

Dr. E. F. Fish, in a paper entitled "Shall the Uterus be Left *in situ* in Excision of the Adnexa?" (Vide, p. 738) says that the uterus

should not be removed if found healthy after excision of the appendages. His conclusions are:—

1. That whenever it becomes necesary to excise the uterine adnexa, if the uterus is sound, leave it.

2. Whenever we excise the tubes and ovaries, and the uterus, although in a pathological condition, in our judgment will yield to treatment, leave it.

The reasons of Dr. Fish for leaving the uterus are: That it helps to maintain the woman's sexual integrity. It relieves the patient of much mental strain and is a prophylaxis to neurasthenia, melancholia and insanity. It tends to maintain the family ties unstrained. It obviates the possibility of vaginal hernia, cystocele, and proctocele, and delays vaginal atrophy. Lastly, it holds up and prevents shortening of the vagina.

In a discussion before the American Medical Association ("Journal American Medical Association," Vol. 28, 1896, p. 297) on "Hysterectomy as an Accompaniment to Bilateral Removal of the Appendages." Dr. Edwin Walker says that the number of uteri which give trouble after the removal of the appendages is small. From his own experience he could recall but two cases, and in both of these there was a persistent purulent discharge. Neither of them had been operated on since. But because in these rare instances we have such cases that are not cured, it is by no means a just conclusion that all should be treated by total extirpation.

Dr. W. E. B. Davis (Vide, p. 298) says that while many hysterectomists tell us that the uterus has no function after the removal of the appendages, they have not demonstrated this, and on the contrary we know that the sexual life of the woman is very much better preserved by leaving the uterus, and that the mental effect is also much better. Because some patients are not completely cured by the removal of the appendages is no argument for hysterectomy in every case where the bilateral operation is required, for nearly all these can be relieved by a thorough curettage.

Dr. J. W. Bovee (Vide, p. 299) does not believe it necessary to remove the uterus in but few of the cases in which the appendages are taken out. He has cured nearly all the cases he has operated on. He usually curettes first, and then, putting the patient in proper position, does the abdominal operation.

Dr. L. S. McMurtry says it is a higher standard of surgical art which, while removing diseased and disintegrated structures, preserves all organs capable of restoration to normal structural integrity. This is not sentiment, but a great principle of surgery which should be generally applied. To remove the uterus for suppurative

disease of the uterine appendages, upon the basis that after the ovaries and tubes have become disintegrated the uterus is no longer useful, is a violation of this principle. He had seen uteri exhibited to medical societies which had been removed under those conditions, and which presented no evidences of positive inflammatory lesions, while the suppurating tubes and ovaries, with adhesions and multiple pus sacs, were left to the chances of gauze drainage.

Dr. H. N. Vineberg, in an article on "Conservative Surgery upon the Uterus and its Adnexa through the Vaginal Route" ("American Medico-Surgical Bulletin," March 7, 1896, p. 316), says that it has been the custom with many operators for the past couple of years to excise the uterus also when both appendages are hopelessly diseased and have to be ablated. This practice has in a measure been attended with better results than when the appendages alone were removed. Still, as experience accumulated, it was learned that even when the uterus and appendages were cut away, some of the patients were not cured of their former pelvic pains and nervous disturbances. The thought then forced itself upon the workers in this field that the failure to cure depended upon the extent of the diseased tissues, and not upon any shortcomings of the operation. Remove as much of the pelvic contents as one could, there always necessarily remained some tissue behind which had been pathologically changed by the preceding diseased processes. There must be some peritoneum, cellular, and lymph tissues, blood-vessels and nerves left after the most radical operation, and these being diseased are sufficient to keep up a certain degree of ill-being.

Already at an early stage of operative gynæcology the thoughtful operators bent their energies toward conserving as much as possible the functional organs of women, and there arose what is commonly known as "conservative pelvic surgery."

Glittering generalizations instead of true indications for so important an operation as hysterectomy, will not suffice. The Péan-Baldy-Polk operation has not been recommended to save life, or tissue, or organ. It has not been presented with any overwhelming reasons which appeal to our knowledge of anatomy, physiology, pathology, or the art and science of surgery as being just the right thing in the critical light of modern research. Past experience, as recorded by the master-minds, votes against it. In all seriousness, this so-called radical operation is a retrograde step. A speedy return to rational and scientific pelvic surgery cannot for some time atone for the damage already done. It puts me in mind of the days when amputations and excisions were so rampant for diseases of the extremities which to-day we cure and save.

My own practice is to perform oöphoro-salpingectomy more frequently by the abdominal route than by the vaginal. Before opening the abdomen the uterus is curetted and the cervix, when deemed necessary, repaired or amputated. When time is an important element to the safety of the patient, the operation on the cervix is left to be done subsequently. In removing the pus-tubes and ovaries, the proximal end of the tube is amputated down to the uterine mucosa. If denudation has been extensive in the pelvis, drainage is established through the vagina. The cul-de-sac of Douglas is opened broadly, so that a Mikulicz packing may be used per vaginam. A tube is used as well. If the curettage and amputation of the cornua and cervix do not relieve the uterus of its tenderness and reduce its size within a short time, intra-uterine medication is carried out systematically until the endometritis and metritis are symptomatically cured. This takes one, two, or rarely three months after recovery from the operation. If the discharge, pain and tenderness return a second or even a third curettage is carried out, rather than recommend the removal of the organ in a young person. Should the woman be near forty years of age, and the metritis prove very obstinate, I then, fearing malignancy, recommend hysterectomy, but not until all other means have failed.

The disadvantages of primary hysterectomy, in addition to removal of pus-tubes and ovaries, are:—

1. It takes longer to do the operation, and the mortality is, in my opinion, higher.
2. The primary hemorrhage is greater and the secondary more liable to ensue.
3. Greater shock.
4. More liable to injure ureters, bladder and rectum.
5. The patient is less of a woman, anatomically and socially.
6. The vagina is shortened.
7. Hernia of the vagina is liable to follow. I had such a case quite recently.
8. A healthy uterus is often removed on account of the difficulty of diagnosing, beforehand; the amount of disturbance caused by the inflamed tubes, ovaries and uterus respectively.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, February 19, 1897.

The *President*, ADDISON H. FOSTER, M.D., in the Chair.

Missed Abortion.

Dr. A. J. LYONS: The specimen which I show you is a mummified fœtus, not developed beyond three months. The patient from whom this was obtained aborted two days ago, and had been pregnant between six and seven months. She missed her menstrual period, which should have occurred on or about August 10, 1896. I was called soon after that date, because she had suffered exceedingly with nausea and vomiting, accompanied with about all the other recognized signs and symptoms of pregnancy. I then replaced a retro-displaced uterus and gave instructions that the knee chest position be taken daily. As I had occasion to see the woman once each month, I was pleased to note a natural development of the uterus until about November 29, when quite a severe hemorrhage took place without any apparent cause. Rest in bed with hot douches, seemed to entirely relieve all symptoms, and the patient was soon able to be up and about again. However, it soon became noticeable that an arrest of development had taken place immediately following the hemorrhage, but as I advised against interference until labor pains began, she finally became of the opinion she was not pregnant, but I was certain that examination proved her to be pregnant. The progress of this case constitutes what is known as a "missed abortion," that is to say, the woman aborted on November 29, 1896, but did not discharge the fœtus until February 17, 1897, almost three months afterwards. The liquor amnii was entirely absorbed, the membranes, as you see, are very thick, the child being rolled up in them very compactly. This is the second case of this kind I have had recently. The other one, I believe, had been missed for a much longer period of time, but as the patient had just returned from Europe when the mass was discharged, I could not be as certain of the history as in the present case. The symptoms and conditions in both cases were alike, except the first case was further developed, and she made a slow recovery, while this patient experienced very few of the late symptoms.

The Consequences of Removing the Uterus.

By Weller Van Hook, M.D.

(See page 157.)

When, in operating for Septic Pelvic Disease, it becomes Necessary to remove the Ovaries, it is Usually Advisable to remove the Uterus also.

By Fernand Henrotin, M.D.

(See page 145.)

A Plea for Retention of the Uterus in Removing the Annexa for Septic Disease.

By Alex. H. Ferguson, M.D.

(See page 165.)

Discussion.

Dr. M. L. Harris: We must all admit that the question, as proposed to-night, is rather indefinite, but there is one thought which we can gather from it, namely, that it is absolutely necessary to sacrifice both the ovaries and tubes, consequently any remarks directed to conservatism are irrelevant in discussing this subject. We admit that conservatism is the most important part of the question, but as the subject under discussion absolutely excludes conservatism, we must leave that point untouched. Likewise we must exclude from consideration all such cases where there exists a specific indication for hysterectomy in some pathological condition of the uterus. If there be malignancy, myomata, or any other indication for hysterectomy, then those cases do not come under the proposition for discussion to-night. The question, then, which we are to resolve presents itself something as follows: (1) Is the uterus, after the removal of the ovaries and tubes, a useless organ to the economy? (2) Does the removal of the uterus in the class of cases under consideration contribute to a more rapid, perfect and permanent recovery of the patient?

We must consider that all active organs and tissues of the body have some function, and that they contribute to the individual some advantage, which enables it better to propagate its kind or to continue its own existence. In examining these functions, only in so

far as they concern us, we note there are two kinds, which we have termed metabolic and mechanical. Metabolic functions, those in which an organ elaborates some product or products which are essential to growth and life, such as the thyroid, for instance, or from some selective affinity, either destroy or eliminate some products which are inimical to the life of the individual, as, for example, the kidney. Mechanical functions are secondary, and in this connection I would mention the ureter and the bladder. Their functions are mechanical entirely, as they simply serve for the transmission of the urine, and for its temporary reception and expulsion. The ovaries possess unmistakable metabolic function. Comparative anatomy and embryology teach that the uterus is simply a differentiated portion of an excretory duct. Primarily, the metabolic ovary is provided with a simple excretory duct. It is a duct of the simplest kind, extending from very near the ovary to the exterior of the body, having absolutely no other function than the mechanical function of transmitting the products of the ovary to the exterior. We find a portion of this duct is differentiated for the purpose of temporarily receiving and retaining the product of the ovary before eliminating it entirely from the body. This portion we find gradually differentiating until it becomes the uterus and the vagina. It is still simply a portion of the excretory duct, with no other function than a mechanical one. When the uterus has reached its highest differentiation it takes part in the function which we call menstruation. Here, perhaps, some will take issue with the fact that the uterus is entirely a mechanical organ, possibly being inclined to accept here a semi-metabolic function. However, I am not prepared to accept this, notwithstanding that the uterus periodically acts in eliminating an amount of blood, consequently a portion of the excess of nitrogen which is retained during the pre-menstrual period, as this is secondary entirely to the metabolic function of the ovary. One other mechanical function of the uterus, or simply a part of its mechanical function, is the part it plays in the formation of the so-called diaphragm of the pelvis. That has already been referred to, but Dr. Ferguson's remarks concerning the value of the lateral ligaments are not applicable to the question. In the cases under consideration the lateral ligaments are necessarily lost, consequently that argument loses its force.

I would like to call attention here to the analogy which exists between the generative organs and the urinary organs. We have in both a metabolic organ provided with an excretory duct. Primarily, that is, biologically considered, this excretory duct is common to the two organs, the mesonephros and the ovary. Both excrete

or eliminate their products through a common duct. Later we find a separate duct for each organ, and in each duct is developed a receptacle; in the duct from the kidney, the bladder, in that from the ovary, the uterus. The receptacles are simply differentiations of the excretory ducts, and are both for mechanical purposes.

The common method of infection in both of these systems is identical, that is, infection extends distalo-proximally. In the urinary organs infection extends from the urethra to the bladder, then through the ureters to the kidneys. In the generative organs infection takes place from the vagina to the cervix, from the cervix to the corpus, from the corpus to the tubes, from the tubes to the peritoneum and ovaries. The difficulty of eradicating infection which has extended up the urinary and genital tracts is well-known. Delbet says concerning the progress of metritis, "It is persistent, having little or no tendency to spontaneous recovery. The lesions have a tendency to advance step by step, from the neck to the corpus, from the corpus to the tubes, and from the tubes to the peritoneum."

The functions of the uterus being entirely secondary and mechanical, the uterus can be of no essential use to the economy after the removal of the ovaries, the organs upon which the function of the uterus depends. The only exception to this is the mechanical function of the uterus in preserving the floor of the pelvis, and whether this be great or small is a question to be determined from our cases. Personally, I do not think it is great.

Much has been said with reference to the symptoms resulting from removal of the uterus and appendages. The symptoms which result from the removal of the uterus and appendages are due entirely to the removal of the organs possessing metabolic functions—the ovaries—and can in no way be attributed to the hysterectomy, *per se*. The symptoms which result from castration have been recently presented in a very elaborate form by Canu* in a series of cases operated upon by Le Bec. Subsequent to the castration he sent out letters of inquiry containing a series of thirty-five questions. He received replies from seventy-five, and he had one hundred and two cases from which his table of symptoms was made. He has tabulated these in a very elaborate way. I will not read them, except to give you simply the headings of the symptoms. These symptoms are as follows: Pain in the abdomen, pain in back, joints and hip, loss of strength, sense of constriction of the neck, nervous disturbances with crises and without nervous crises, headache, irasci-

* Rev. Med. Chir. des. Mal. des Femmes, 1896, xviii. 455.

bility and nervous hypochondriasis, diminution of sight, chills with sweats, pruritis, tympanites, enlargement of abdomen, dyspnœa and borborygmus, constipation, palpitation, painful micturition, vaginal discharge. The symptoms may be summed up in the term cachexia ovaripriva, and are due to the loss of the function of the ovaries. One point which he wished to bring out particularly, and which I desire to mention again, was concerning the loss of sexual desire. He went into this very carefully. He found that atresia of the vagina prevented coitus in nine cases. In nine cases the atresia of the vagina was so marked that it rendered coitus almost impossible. In twenty-two cases coitus was impossible on account of local pain. In fifty cases there was a suppression of desire, and in twenty a conservation of desire. Among the twenty cases with conservation of desire seven had menstrual flow more or less abundant. These symptoms, then, which I include under the heading of cachexia ovaripriva are due, as I think, entirely to the removal of the ovaries, and the hysterectomy plays absolutely no part in them, consequently the removal of the uterus does not remove from the patient any function whatsoever after the ovaries are taken out.

The second part of the question is, does the removal of the uterus contribute to a more rapid, perfect and permanent recovery of the patient? The first thing to be considered is primary mortality. This we know to be very small. The primary mortality is not such as to militate against the operation in this particular class of cases. Statistics are abundant on the subject. Among 746 hysterectomies* in this class of cases the mortality was only 5 per cent. among several operators, consequently the primary mortality rate would not militate against the removal of the uterus. As I said in the beginning of my remarks, the subject under discussion is not definite enough, in that it does not state what is meant by septic pelvic disease. But I take it that it does not mean simple pyosalpinx. I take it that it means septic infection of the pelvis in its broadest sense. We may have a pyosalpinx that has ruptured, or we may have abscesses in the peritoneal cavity that are circumscribed, abscesses in the cul-de-sac, abscesses anterior to the broad ligaments, and abscesses in the broad ligaments themselves. Those are the cases which I consider this proposition means, and not simply cases of ordinary pyosalpinx. In such cases the uterus in many instances forms a part of the abscess wall, and it is only in them that I consider hysterectomy, irrespective of the method of performing it, is indicated. In those cases, there is no doubt, from the statis-

* Hartmann—Annales de Gyn. et d' Obst. 1896, xvi. 190.

tics at our command, as well as from personal observation, that patients do more rapidly and perfectly recover when a hysterectomy has been performed than when it has not. In support of this argument we may mention the number of secondary hysterectomies that different operators have been obliged to perform after having done primary salpingo-oöphorectomies in this class of cases. Quoting from Bouilly, Segond has had 10 secondary hysterectomies; Richelot, 36; Jacobs, 5; Delagéniere, 3; Picque, 1; Pozzi, 1; Bouilly, 11. Here are sixty-seven cases in which seven different operators have been obliged to resort to secondary hysterectomy in cases that were not cured by primary operations. I have been obliged to do a secondary hysterectomy once in a case where I had performed salpingo-oöphorectomy. This patient made a complete recovery only after the hysterectomy, the first operation failed to relieve her. When I asked her in reference to her sexual desire, one year after last operation, she said that she had not enjoyed sexual intercourse so much for years as during the past few months since the operation. In other cases which do not come under this heading, but which admit of conservative surgery, I am distinctly not in favor of hysterectomy.

Dr. HENRY P. NEWMAN: There is very little to be said after the subject has been so thoroughly gone over, pro and con, by the essayists. The general propositions advanced by those favoring the removal of the uterus along with the appendages are (1) that there is a more rapid, complete and permanent recovery; (2) that the uterus thus mutilated is a useless organ, a mere excretory duct, as claimed by Dr. Harris. As regards the first proposition, we all admit that a radical surgical procedure will sometimes more speedily dispose of a case than a conservative one, as, for instance, in necrosis of the tibia. When this is treated with the usual procedure of scraping, the patient, perhaps bedridden for a considerable time, recovery is retarded, whereas the health of the individual would be more speedily restored should a surgeon be called in to operate in a more radical way and amputate the limb. But no surgeon would favor such a procedure. The gynæcologist and the surgeon alike have in view the preservation of structure and the prevention of mutilation. The completeness of the cure cannot be established until time has elapsed sufficient for readjustment of the normal relations of the system, recovery from all disturbing effects of the operation and the preceding disease. In case of evident failure or imperfect results we should look for the cause in some faulty technique perhaps, rather than condemn too hastily an unoffending uterus. As in many instances the pathology is that of pus tubes or

septic disease of the appendages, it will not be necessary to remove even the immediate organs involved, but we will simply adopt the method of treating abscesses by direct incision and drainage, preserving organs that are now extirpated and relieving by subsequent operation if necessary any deleterious results that may have occurred from the inflammatory trouble.

In regard to the claim that the uterus is a useless organ, a mere appendage, so to speak, of the ovaries and tubes, I do not think this is proven by any means, or that it has merely a mechanical function. Certainly its importance in sustaining the pelvic floor is one that deserves some consideration. It serves as a support to the floor of the pelvis, and the diaphragmatic action of this structure is necessarily interfered with by so mutilating a procedure as removal of the uterus and its annexa. When the uterus is removed adhesions invariably occur, there is more or less distortion of the pelvic floor, and the diaphragmatic action, which is so essential to the proper function and circulation of neighboring viscera, as well as the sustaining power which it has as regards the superimposed viscera, is interfered with. It may be a mere accident, but I have examined a considerable number of cases after extirpation of the uterus in which there was more or less sagging of the abdominal viscera with the pelvic floor. There was ptosis of the stomach, intestine and of the kidney. I have seen this frequently. We know that in pendulous conditions of the abdomen we are very apt to have the viscera above more or less displaced, and after removal of the uterus why should we not have like conditions from sagging of the pelvic floor? Then, too, we have interference with the function of neighboring organs, as the bowel, the ureters and bladder, and if disturbance occurs it is apt to be more or less permanent. Before removing the uterus, we should be fully satisfied that it has no other office than that of a mere excretory duct, leading from the ovaries and tubes, and that no ethical consideration of the patient's physical welfare contra-indicates the procedure. The general proposition is one that carries us away from the best surgery of the day, and is rather inclined to be retrogressive than progressive, as the tendency at the present time is along the line of preserving organs and structures. The morale and the many perhaps minor details that enter into this subject have been very wisely and carefully handled. At the same time, I feel as if we ought to sustain the more conservative methods, look in the future to a more careful technique in extirpating the appendages in order to do away with the painful and protracted sequelæ that sometimes occur.

Dr. JOHN T. BINKLEY, Jr.: This is a subject in which I am very

much interested. I may in registering my experience in this matter repeat, but shall try to be brief.

The functions and the early anatomy of the pelvic organs have been dwelt upon so clearly by Dr. Harris that I can add nothing to it. As you all know, this was a subject that our President had under consideration, and addressed every member of the society a card, asking his opinion regarding the necessary procedure in such conditions. Now, it is a question, how different men interpreted his inquiries, and what they mean by septic pelvic diseases. Every man has answered this postal card according to his own experience, and I do not see how he could do differently. My own experience enables me to concur in nearly all Dr. Henrotin has said. I am heartily in accord with him, but am not so enthusiastic as he seems to be. I believe that those who oppose removing the uterus, faintly see a "red flag" when it does not exist. I am sure no gynæcologist adopts any method in his work other than that which in his experience enables him to obtain the best results. He does not remove the uterus simply because it is there, or because he is operating, and wants to do a little more extensive work. Every gynæcologist wants the best possible results. He wants his patients to get well, and if he believes they will get well by removing the uterus under such conditions as we have under discussion, this procedure should be carried out. I do not believe I have removed the uterus in more than 15 per cent. of my cases of septic pelvic disease. I have been gratified with the results in every instance, and I have had no cause to regret it. My mortality, nil. I have never lost a case in which I have removed the uterus, consequently I have great respect for hysterectomy. I have had a great many cases upon which I have operated, but not as many as some of the gentlemen who are here. I have also assisted a gentleman who has operated a great number of times for removal of the uterus, and I asked him the other day if he would not come down and discuss this subject to-night, and he replied that he would be very much criticised for doing it. I refer to Dr. Byford. I have recently read an article by him in the *American Journal of Obstetrics* on this subject in which he favors the removal of the uterus in the class of cases under discussion, and I have recently seen him do two or three hysterectomies. So his opinion concurs with that of Dr. Henrotin. Dr. Van Hook takes very much the same position that I do myself in septic pelvic diseases. I have interpreted the inquiry made by our President to mean septic diseases of the pelvis, in which there may be pyosalpinx, or an abscess in the pelvis that is circumscribed, the uterus being one of the walls of the circumscribed abscess on one or both sides. I do not mean an ab-

scess lying against the uterus, but where a membrane lies between the uterus and the abscess, so that in ripping it loose we denude the uterus of its peritoneum. As an evidence of how quickly adhesions will take place, I wish to refer to a case upon which I operated a few days ago, a young woman for double pyosalpinx, in which there were extensive adhesions, and I was compelled to drain with narrow strips of gauze, freely packed in both fossæ up against the posterior wall of the uterus. Within twelve or fourteen hours I began to draw the gauze from the parietal adhesions so as to keep it loose and keep up the capillary action. It is my custom at the end of six or twelve hours to draw the gauze a little and place new top dressings on the abdomen. I label my gauzes either by knots or strings so as to know which to draw first. One piece of gauze, which I began to draw at the end of forty-eight hours after the packing, would not come. I could not start it. The piece of gauze was as wide as my four fingers, and in my endeavor to loosen it I twisted it both ways, and even then could not draw it. I then concluded that I might have passed a ligature through the gauze. I carried down a little probe, felt I could go below through the parietal wall between the gauze and sutures on each side. I carefully prepared the abdomen. I slipped my finger down and found that the omentum had become attached so tightly to the top fold of the gauze that I had to push it away before I could draw the gauze. This took place in forty-eight hours, the omentum having fallen up against the largely denuded peritoneal surface. This demonstrates the rapidity and character of adhesions in such cases.

Both Drs. Van Hook and Newman referred to conservative surgery, and made a rather peculiar comparison. Dr. Van Hook spoke of the tendency to save all of the stump end, if possible, and Dr. Newman says that we will employ the method of scraping in necrosis of the tibia rather than resort to the more formidable method of amputation of the limb. Both of these are acknowledged to be necessary members of the human economy. Naturally we will try to save as much of the tibia or end of the stump as possible. But it seems to me these comparisons have no bearing whatever on the question we are discussing. They are rather far-fetched, to say the least. The only case which Dr. Van Hook quotes, upon which he has operated, gives a satisfactory result, which, of course, is in accord with my own experience, as well as that of others who take the other side of this question. Do not think we are talking about uteri that are not diseased. How do we know that the ovary and tube are diseased? How do we know the pathology is marked or limited? Because we see and feel it. We see pus exuding from it.

We see the condition of the membranes and the plastic exudate thrown out all around it, and we see the same thing around the uterus. This is the kind of uterus we are talking about in this discussion.

Dr. Ferguson spoke of atrophy of the uterus following operation. I do not believe that statement can be absolutely proven, for the reason that we have fibroids developing in the uterus after the removal of the appendages. I exhibited a photograph at the last meeting of a case in which a fibroid had developed near the horn of the uterus after a double oöphorectomy had been performed. Furthermore, we all know that sufficient nourishment passes from the uterine vessels to support and to take care of the growth. Dr. Ferguson also says that if the uterus were normal, why extirpate it? So say we all. Who does it?

Dr. Ferguson says he knows of primary fatal cases of gonorrheal endometritis. Gentlemen, we do not remove the uterus because we are afraid it will prove fatal, but we do so for the reasons given by Dr. Henrotin and because of reflex disturbances. The fact that a considerable number of these cases, after having their appendages removed, come back is an argument in favor of removing the uterus at the primary operation. Dr. Ferguson quotes a number of cases in which there was great pain following operations for the removal of the uterus. Every gynæcologist and every surgeon knows that in the vast majority of cases pain does not follow the operation of hysterectomy. On the contrary, the reverse is the rule. We find patients coming to us with a pathological condition in the pelvis which is so marked that we can detect it from the physical appearance. We make an operation, remove the appendages, and then later find the symptoms of pain just as marked as before. At the primary operation we thought we had done a good thing, and perhaps had congratulated ourselves that we had relieved the patient, but we frequently find that very little relief is afforded by an incomplete operation of removing appendages only. These are the cases for hysterectomy. The patient may be better after the removal of the appendages. She may not become progressively worse, but she remains bad. That is our experience often.

I think Dr. Newman, in addition to making a very inconsistent comparison, is begging the question when he refers to drainage as a possible cure for septic pelvic disease.

Dr. Ferguson made a statement that seems to me very inconsistent when he said that the uterus forms a part of a suspension bridge, or that it acted as such in that it supported the pelvic viscera. One might as well say that a rider supports his horse by sitting on the horse's back.

With reference to those cases that have gotten what Dr. Ferguson designates as the "operative habit," I will say that my experience is limited to three in number. I could report them in detail if it were necessary before and after operation, but it would not enable me to make my point stronger than simply to say to you that these cases have been entirely relieved, to my certain knowledge.

A Plea Against Hysterectomy When Removing Diseased Appendages for Septic Pelvic Disease.

By F. H. Martin, M.D.

(See page 152.)

Dr. Nicholas Senn: The papers read and the remarks made seem to refer to anything else except the subject under discussion. The wording of the subject we are expected to discuss to-night is exceedingly unfortunate, in that it limits our discussion to the necessity of removing the uterus in septic disease, requiring the removal of the ovaries and tubes. If we were to limit our remarks to the legitimate subject of the discussion, very few gentlemen would have anything to say. It seems to me that the whole trend of the discussion thus far has been to speak more from a practical than from a scientific standpoint. In order to discuss this subject intelligently, it is necessary to lay down a scientific pathological foundation; in other words, we ought to know what we mean by a septic inflammation of the tubes and ovaries requiring operative interference, and the necessity of removing the uterus at the same time. I am sure that every gentleman present is aware of the well-known pathological fact that septic processes originating in the uterus seldom extend to the tubes and ovaries by continuity of surface. I had hoped that we should learn to discuss more thoroughly the subject I would like to see discussed in this society, namely, the proper modern treatment of pelvic suppuration as the general practitioner meets it. In the first place, we have to eliminate from our subject all gonorrheal inflammations involving the uterus, tubes and ovaries, uncomplicated by a mixed infection. We have heard to-night a good deal about the necessity of removing the ovaries and tubes and even the uterus, in cases of gonorrheal inflammation. You all know that the gonococcus exerts a specific influence upon pre-existing cells; it is not a genuine pus microbe, as every gynæcologist knows. All it can and will do is to produce a circumscribed inflammation with very little tendency to extension, in contradis-

tinction to the microbes that produce septic infection—the pus microbes. We have said very little in reference to genuine septic infection of the uterus and its appendages. The pus microbes, if they are introduced into the uterus and enter a pre-existing infection atrium, diffuse themselves through three distinct pathways, either through the connective tissue spaces, the uterine veins, or, in preference through the lymphatic channels. Septic inflammations, originating in the uterus and extending to the appendages, and particularly to the connective tissue, resulting in the formation of circumscribed suppurative lesions, are the conditions which we ought to discuss instead of spending the evening in discussing subjects entirely remote from the legitimate subject under consideration.

As the hour is late, I will formulate my ideas in reference to the subject very briefly. The uterus acts as a pathway for septic infection of its annexa and the adjacent connective tissue without being permanently damaged; in other words, the infection atrium through which the septic microbes enter uterine tissue, and from there the connective tissue spaces, blood vessels, or lymphatics, reach tissues or organs that are better predisposed for suppurative inflammation, where they produce their specific pathogenic effect. The fallopian tubes to the ovaries are not often affected primarily, but the adjacent peritoneum and connective tissue are the favorite seat of localization, resulting in a circumscribed, diffuse peritonitis, or in a circumscribed, so-called cellulitis, phlegmonous inflammation. It is only in cases that tend to destroy or shorten life that I would unhesitatingly advocate and practice extirpation of this organ, the uterus, in which is the intrinsic seat of a disease; that is, in cases of septic thrombo-phlebitis, as we find it in the parturient woman, in women occasionally subjected to operative treatment without the necessary antiseptic precaution, and that means infection of the veins of the uterus, so liable to result later in fatal pyæmia. It is in such cases that hysterectomy occasionally, if the disease is recognized in time, will save life. In other cases in which the infection takes place through the lymphatics, as we find it particularly in a recent parturient woman, where the septic process extends to the adjacent peritoneal cavity or to the connective tissue around the uterus, there is a legitimate indication for a primary hysterectomy. But you will all agree with me that it requires the greatest diagnostic skill to set down indications with sufficient clearness to warrant such a mutilating procedure. In cases in which the uterus acts as a temporary pathway for infection, where the infection localizes itself outside of the organ independently of the peritoneal cavity, in the connective tissues, I would limit my surgical procedures, as I

would in any other locality, after diagnosticating and localizing the exact focus with sufficient accuracy to attack it, to incision and drainage, knowing well that by liberating the suppurative product, the uterus having served the purpose of a temporary pathway for infection, it will recover its integrity and return to its normal condition, as every obstetrician can testify. I believe the gynæcologists will do more for their department in surgery by working conservatively than by mutilating procedures.

I was very much astonished indeed when Dr. Harris made his comparison between the bladder and the uterus. Such a comparison is odious, strange, and requires no remarks on my part. The bladder a reservoir for excretions, the uterus a part and parcel of an important generative tract, which, during pregnancy and during the life of the woman performs a most important function. It is more than a mechanical apparatus; it is an organ endowed with special and high functions, and certainly deserves the respect of every modern gynæcologist.

Dr. Henrotin, who, for a short time has figured among us, is a disciple of the great Péan and Segond, and advocated the removal of the uterus for all pelvic and suppurative lesions, has become recently more conservative in his ideas. His paper to-night is characteristic. We find that it contains many "ifs," so many modifying circumstances, that we look in vain for such positive views such as were advanced in the past. I know from my personal observation that he does not practice what he preaches. I have seen Dr. Henrotin cut through the vaginal wall into the pelvis, in order to remove suppurating tubes and ovaries, and leave the uterus *in situ.* Whether he found it necessary to remove the uterus afterwards, I do not know. But I do know that the practice with him not to remove the uterus is becoming more common, and I trust I shall have the pleasure of hearing, from time to time as he presents his views, that he is becoming more and more conservative.

Dr. Reuben Peterson: As the hour is late, I shall be as brief as possible. I would take exception to the remark made once or twice during the discussion that the removal of the uterus for septic pelvic disease is a retrograde step in gynæcology. I most firmly believe that this is not true. Dr. Henrotin, in his statement of the facts dealt with a limited class of cases. His remarks had particular reference to those cases in which the appendages were irreparably diseased. The only point that the gynæcologists to-day are disputing about is whether in the majority of such cases the uterus is sufficiently diseased to warrant its removal at the time of the primary operation. That question can only be answered on patho-

logical grounds. As a temporary expedient, we may take out more uteri now than we will later, but the ultimate answer to the question can only be made on pathological grounds. In other words, can we save the uterus by less radical procedures. Just because some of our cases do not get well after the removal of both appendages is no reason for adopting the universal rule that we should remove the uterus every time that it becomes necessary to remove these organs. This is begging the question. In a considerable number of operations of removal of both appendages for purulent disease, I find that the majority of my patients have been cured pathologically and symptomatically. A certain proportion of them have not been, and it has been my endeavor to find out what cases require the removal of the uterus at the primary operation.

Investigations have shown that the ravages of gonorrhœa within the uterine cavity are severe; that the disease not only penetrates the endometrium, but the uterine wall, and it remains with us to determine whether we can cure such an infected uterus by curettage and gauze drainage, and by other simpler means than hysterectomy. I do not believe that we should take the position of Schauta and others, who claim that the uterus should always be removed when, at the primary operation, the appendages are found to be infected by gonorrhœa. I believe we can cure many cases by simpler means and retain the uterus. Except in severe cases, the removal of the uterus does not add a great deal to the danger of the primary operation, and when this additional procedure would jeopardize the life of the patient all experienced abdominal surgeons would leave the uterus *in situ*, no matter what their opinion upon the general proposition might be.

There is a class of cases in which I think the uterus should sometimes be removed, and that it where, during the enucleation of the appendages the uterus has been badly torn. You may leave the pelvis in as good condition as possible, yet the peritoneum has been torn from the uterus and there is increased danger of intestinal adhesions. We also frequently find cases of advanced pelvic disease where the abscess is on both sides, and it seems best to remove the uterus to obtain good drainage. I do not agree with Dr. Ferguson that we can get just as good drainage by opening the posterior cul-de-sac. When the uterus is removed we get better drainage and a more satisfactory result. The cases I have mentioned are only the exceptional ones.

With reference to tubercular disease of the appendages, when we can demonstrate its existence on the operating table, and the appendages are ablated, then the uterus should also be removed, for

fear that it be infected with tubercle bacilli. Tuberculosis of the female generative organs is a serious disease, and should be treated radically.

Dr. JOSEPH B. BACON: I would like to make a few remarks with reference to the removal of the uterus and its relation to weakening the pelvic floor, with especial reference to the sigmoid flexure. You can demonstrate very well this sagging of the sigmoid in the dead-house. The sigmoid has a long mesentery, and it has a tendency, when loaded with fecal matter to lie not in the left side but deep in the pelvis, particularly in women who are constipated. In constipated women the removal of the uterus permits the pelvic floor to sag.

A few days ago I examined a woman at my clinic whose uterus and appendages were removed several years ago. The case was such a well-marked and typical illustration of sagging of the pelvic floor that I showed it to the students. When the uterus is removed along with the appendages it allows the loaded sigmoid to sag more and more in the pelvis, and tends to create an inflammation of the sigmoid. It seems to me that those who have advocated the removal of the uterus in connection with the appendages have not brought forth sufficient evidence to warrant the extirpation of this organ. They have not placed their cases upon a scientific basis. In some instances the uterus was removed, I understand, simply because of a discharge from the uterine cavity. It is only in recent years that surgeons, in removing pus tubes, have done so properly by thoroughly dissecting the tube well into the horn of the uterus, so that we only have comparatively recent statistics upon which to base our results. In some of the cases reported to-night the uterus was removed for reflex pain. To remove the uterus for reflex pains, without previously making a differential diagnosis of the condition of all the other pelvic organs, proves absolutely nothing.

A short time since I had a case where an ovary had been removed for intense pain. The operation was performed by a good man. He hesitated to remove the organ, but did so, and saw the mistake he had made afterwards. The patient was subsequently sent to me, and I found in the rectum a submucous cyst containing two ounces of fatty tissue and debris. This cyst had produced the characteristic pain. By pressing upon the cyst pain was reflected to other organs of the pelvis.

There are several points I would like to discuss, but as the hour is late I will not do so. As Dr. Byford's name has been men-

tioned in the discussion, and as he is not present, I wish to speak briefly for him. I have been intimately associated with him of late, and it is not his rule to remove the uterus with the appendages for suppurative pelvic disease.

Dr. J. A. Lyons: In the interest of non-mutilating surgery, I desire to put my stamp of disapproval upon such a proposition as is here presented for discussion.

Whatever our individual opinions may be upon the subject, I am satisfied that no unasked result will be obtained from a discussion of the question, for I am sure no hard and fast rule can be laid down for guidance in all operations for the septic pelvic diseases. I believe that there is a growing tendency on the part of the profession to regard the uterus as a useless organ, when deprived of its appendages, and that, as a consequence, it is sometimes removed simply because the ovaries are diseased.

In my opinion, it is advisable to leave a moderately healthy uterus, when the ovaries have to be sacrificed. Such a uterus in normal position will help maintain the pelvic diaphragm, and this diaphragmatic action of the pelvic floor will undoubtedly help preserve the normal position of the bladder and intestines.

The uterus in normal position and location helps prevent the bladder from being displaced posteriorly, the rectum, sigmoid flexure and other portions of the intestines from being displaced downwards and anteriorly. These organs are supported by the uterus, which acts as a prop to them, and they in turn help preserve the normal location of all the other abdominal organs. A complete hysterectomy does undoubtedly shorten the vagina, and in rare cases atrophy of the vulva and vagina results. After hysterectomy the pelvic floor sags downwards, hence gives no support to the organs above it, as originally intended, but rather tends to drag them with it, and vaginal hernias may result.

Many other reasons of an accidental character, such as injuries to the bladder, uterus and intestines, can be directly attributed to unnecessary removal of the uterus. Some of those organs have been opened into, tied off, or otherwise injured by the removal of the uterus, accidents, which in the majority of cases, are most unlikely to occur in doing salpingo-oöphorectomy. The injurious effects hysterectomy has upon the sympathetic and spinal nerves, if any, is not yet known. I now believe it is a duty incumbent on all gynæcologists to preserve every organ possible, as much as it is incumbent upon the general surgeon to save every finger, yes, even finger-nail possible.

The above remarks refer principally to clearly defined pus tubes, whose proximal ends are sufficiently small to tie off without injury to the uterus. However, there are frequently pus collections in the pelvis, especially those of an intraligamentous nature which involve the uterine wall, so that the uterine wall becomes a part of the abscess sac, or it occasionally happens that the abscess may originally form, having the uterine wall as a part of its membrane, the infection having taken place through the uterine lymph channels sometimes occurs as in cases of puerpural infection. In operating upon such cases, one would naturally feel called upon, at least in most cases, to do a hysterectomy, and I believe that some of our colleagues do always remove the entire organ, and indeed claim that such a procedure is almost universally necessary. My belief is that even many such cases can be practically cured without sacrificing the uterus. To illustrate, permit me to cite the following case:

About two years ago I was called upon to remove a pus tube which had formed soon after an acute attack of gonorrhea. Upon opening the abdomen and breaking up some adhesions, I discovered a tumor without pedicle, which was a tubo-ovarian abscess, and which involved the left lateral wall of the uterus. It was necessary to either do a hysterectomy or drain. I removed first the tube and ovary on the opposite side to overcome hemorrhage, and clamped the large abscess sac I referred to as close up to the uterus as possible, and tied off the broad ligament at the pelvic end, then cut between the clamps and uterus, dilated the left horn of the uterus, introduced through it several strands of silkworm gut as drainage into the uterine canal to the vagina, curetted the uterine surface of the abscess wall, cauterized it with carbolic acid and then approximated the peritoneal coverings as well as possible over the side of the tube and over the rest of this raw surface, and the patient is to-day enjoying the very best of health. The drainage was not through the abdominal wall, but through the dilated tube remnant into the uterine canal, a perfectly natural route for this particular case at least, and the results were as good as could be expected from any kind of drainage; in fact, the results were almost perfect.

I know further that many abscesses of this character can be and are drained successfully by some of our own Fellows, Drs. Byford, Watkins and F. H. Martin, to my certain knowledge, drain them so that uteri that might be removed by others are thereby preserved to their credit, and to the satisfaction as well as to the benefit of the patient.

I consider the operative procedures of my friend Watkins worthy of imitation. He saves not only all uteri possible, but also every portion of a healthy ovary possible. To-day I had the pleasure of examining a specimen of double pyosalpinx and a left ovarian abscess which he had just removed. On the right side the inflammatory action was so bad that it involved the appendix, necessitating its removal. Notwithstanding this fact, he preserved her right ovary, although it was necessary to puncture a number of cysts in it. He does this to preserve ovulation and menstruation.

To justify me in the remark "that the adhesions formed around packings for drainage frequently clear up entirely," I recall a very bad case of suppurative appendicitis, where nothing could be done but to simply incise and drain. A hernia subsequently followed, and during the operation for its removal, a very large mass of adhesions were easily seen, involving the intestines. The first herniotomy failed; a second one became necessary, when, to our surprise, all adhesions had entirely disappeared, and the intestines lay beautifully in the pelvis without an adhesion. The adhesions had been absorbed without an effort on our part to remove them.

Dr. FERGUSON (in closing): I wish to draw attention to one or two points. In the first place, I think in our plea for retention of the uterus we have the best of the argument. Dr. Henrotin has told us that he only removes the uterus in cases where there is a great deal of suppuration. Dr. Binkley is also with us, although he says he has had a success of 100 per cent. in fifteen cases of hysterectomy after salpingo-oöphorectomy. I do not doubt it, yet at the same time, it is positively wrong to base one's percentage of recoveries on a few cases. Some time since I did a pylorectomy for carcinoma of the pylorus, and the patient recovered. It would be unjust for me to draw many conclusions from that one case. I believe in Germany the percentage of recoveries is not allowed to go into print unless the surgeon has operated on one hundred cases. Dr. Henrotin presents a strong argument in favor of secondary hysterectomy, but not primary. Secondary hysterectomy may be done, not for pyogenic infection, but for myoma of the uterus, as in the case presented here. So in all of the cases where secondary extirpation of the uterus is performed, it may be done for something else. The position I take is that primary amputation of the uterus for septic pelvic disease should not be frequently done, that is, not nearly in 50 per cent. of the cases where the appendages are removed, as our subject for this evening's discussion proposes.

I am sorry Dr. Senn has left the room. His remarks were astonishing to me. He comes before this learned society with a cold shower bath by saying all our remarks this evening have been irrelevant, and yet he takes up this important question almost word for word and discusses it. He talks about puerperal infection, gonorrhea, and of the pus microbes, and all this is what we have been talking about in connection with the uterus. These belong to the subject under consideration. I for one have not to stand such sweeping remarks as he has administered to us to-night, but I understand (since) that they were all intended for the speakers on the affirmative side of the question.

Official Transactions.

T. J. WATKINS, *Editor of Society.*

MEDICAL THERAPY OF THE FEMALE GENITAL TRACT.*

By O. B. Will, Peoria, Illinois.

In choosing the topic on which I have the honor to present some considerations this evening, in response to your kindly recognition, I have not been unmindful of the high position and technical character of your organization. It has occurred to me, however, that it would be more opportune to deal with possibly lighter matters involving somewhat extensive personal experience, rather than with those of less widespread, even if of more advanced applicability. I therefore beg to express the hope that what I say may not be altogether without value, and that much light may be, by discussion, shed upon the points I shall touch, and such as will prove of great service to that larger body of practitioners whose acts are steadily governed by your dictum.

There certainly is a medical side to gynæcology, and in the therapy of the female genital tract medical resources have played and must continue to play an important part. As the disorders to which these are applicable are usually the result of infection from pathogenic germs, and under any and all circumstances accompanied by vascular engorgement, if not stasis, more or less general and severe, with hyperplastic activity of varying extent and greater or less pain, it becomes necessary to select agents for the accomplishment, as nearly as may be, of the following objects, which seem legitimately to govern in all local therapy, viz.: depletion, anæsthesia, antisepsis, resorption and reconstruction.

In considering the medical means for the application of these principles, and accomplishment of these purposes, I think I cannot do better than to take up *seriatim* those of most typical and active character now before the profession, and analyze their virtues, in the light of personal experience and observation, as well as that of other observers whose attention has been critically assigned to the several phases of the subject.

In this recital I shall apply the methods and principles inculcated to the vaginal and uterine sections of the tract, in the order named, noting subsequently the exceptions or differences necessary in connection with other features of the individual parts.

Taking up, then, briefly, the immediate objects sought, in ap-

* Read. For *Discussion*, see page 213.

proximate order, we ask ourselves what we mean by depletion, in this connection, and how can it be accomplished. Under states of engorgement of the pelvic viscera, especially the uterus and immediately adjacent tissues, in which the vessels are distended to their fullest capacity with their peculiar fluid contents, it seems necessary to deplete in some way, but it seems equally advisable, under our present pathologic and histogenic knowledge, to question the legitimacy of abstracting the serum, or fluid alone from them and thus furthering an accumulation and condensation of the more solid, organic constituents. Certainly a more formidable barrier to normal nutritive changes and tissue metamorphosis could not seemingly well be established. The healthy nutritive activities demand a rapidly moving, yet fluid, as the abnormal requires a sluggish, circulation. Any act that lessens the fluid and increases the solid constituents of the circulating medium, above the normal standard, places in jeopardy the functional well-being of any organ or tissue. And yet that is exactly what is being done every day, all over the country, by the use of the conventional boroglycerid and glycerine tamponade of the vagina. I was many years ago precipitated into this quagmire of therapeutics, together with the majority of practitioners, where I remained until rescued by a careful investigation of phenomena and results. Although a marked sense of comfort is speedily imparted by such treatment in cases of inflammation, and independent, active or passive congestion of the uterus and adjacent tissues, the relief obtained is only temporary, the conditions subsequently becoming even more aggravated and obstinate, excepting, possibly, in œdema of the mucous membrane and immediately underlying tissues of the vagina. If we stop to philosophically and clinically consider the pathological conditions, in relation to these salient features of this routine treatment we shall find our efforts valuably repaid in the correction of a flagrant therapeutic error. No system or method of depletion through the mucous membrane of the genital tract, excepting one of those involving the periodical abstraction of blood, such as systematic venesecretion, or the application of leaches, can accomplish the purpose of relief from vascular congestion without a detention of those elements which, more than all others under the circumstances, make for obstruction and destruction. This is a fact that we dare not overlook in the biology of tissue change and the economy of restoration.

As compared with the foregoing popular method, we have, in the use of the time-honored *hot douche* a much more rational and meritorious procedure, and one perfectly in consonance with the

edicts of modern pathology and histology. By the action of the penetrating, moist heat upon the vaso-motor nervous system, as well as directly upon the tissues themselves, the blood is driven either backward or onward into receptacles of larger calibre, and where it becomes more amenable to the general circulatory forces of the system, and where it can better maintain its integrity and vital force. We are all aware of the constant value of heat, especially moist heat, in all classes of inflammation and congestion, wherever located, and in the therapy of the female genital tract is use deserves a position second to none other. But here arises the ever-important question of *how* as well as *what*. How to best apply this agent, and the answer to that question means much in results. The vaginal and uterine tracts are the avenue; the best means are a fountain syringe and sterilized water. But there are other things governing its administration for utility in the highest degree. The first consideration is the patient's immediate position, and second the time occupied. The use of a hot vaginal irrigation while sqatting over a vessel is practically worthless. Such position is a most unfavorable one, in that gravity alone, without the inevitable aid of the patient's muscular efforts is sufficient to force the pelvic and abdominal contents downward, choking up the outlet and mechanically obstructing the circulation, the very thing that should be by all means avoided.

The most philosophic and practically effective positions for such are the exaggerated lateral and knee-elbow, the former being readily applicable, without discomfort, on a couch, with the aid of a Kelly pad, and the latter with scarcely more discomfort and annoyance in an ordinary bath-tub. In the assumption of either of these positions, if the patient be properly instructed as to the intent, the abdominal pressure is of course removed, the pelvic organs elevated, and the penetrability and efficiency of the heat in emptying the local circulatory system enhanced many fold. In fact, there seems to be no other satisfactory way of applying this most indispensable synergistic and curative agent. After such a vaginal irrigation, given in small stream, and as hot as can well be borne for half an hour, the patient should be enjoined to maintain the recumbent posture for several hours, after which she may be subjected to any further local treatment desirable. In the event of intra-uterine irrigation being resorted to, as is often necessary, it should be given in the manner hereafter described, and should follow within eighteen hours the prolonged vaginal bath. A more mistaken and pernicious habit cannot be indulged in, than that of using the hot vaginal douche in the morning and then allowing the patient to be on her feet the re-

mainder of the day. The relaxing effect of the application is such as to temporarily soften and weaken the tissues and supports, and cause them to lose their resiliency for some hours, during which, if the erect position is indulged in, the pelvic organs settle down, and when the vessels again fill, as they measurably must, their position is more cramped than before, and their tortuosity increased. On the contrary, if the recumbent posture is maintained until reaction takes place, the normal elasticity of the vascular and other tissues is restored, and a greater resistance offered to all morbid impulses. These are not merely theoretical, but tried, true and extremely practical facts. I am not pretending to offer them as anything specially new, but only in the line of an attempt to fix therapeutic values. These vaginal irrigations should be repeated usually as often as every day, and that at night, reserving the morning hour for local applications of other character such as intra-uterine or simple vaginal, as the physician may think best.

Another element of importance in securing the best results, and judiciously associated with this form of depletion, is the property of some of the salines, such as chloride of sodium. The effect of their solution in the water is peculiarly satisfactory and trustworthy, especially in intra-uterine irrigation. They not only cleanse the mucous membrane of accumulated secretions, but so alter the glandular products as to favor and promote their rapid elimination, relieve the tension, and stimulate the resolvent and nutritive forces. It is almost marvelous what a change is sometimes produced in that way by persistence, under circumstances of apparent gravity. Then, too, this action is measurably antiseptic, and the astringency exercised of such a character as not to interfere rapidly, if at all, with the patulousness of the emunctories. As an additional and more positive antiseptic and germicide the mercury bichloride may be used alternately with the saline, and in that way I have secured the most excellent results in eliminating septic agents and products yet within the confines of the uterine mucosa.

As has been intimated, the foregoing method of depletion is as applicable to the interior of the uterus as to the vagina, excepting that its application must be in the hands of the physician himself, or those of a competent nurse under his immediate supervision, and with a technique somewhat different. In intra-uterine therapy glycerine has no place whatever. I have never seen it applied without the production of a degree of pain immeasurably in excess of any possible benefit. The hot aseptic and antiseptic douches, however, are as acceptable and valuable here as in the vagina. In relation to the uterine irrigation, the dorsal position of the patient seems to be

the only practicable one, preferably after a seance of five or ten minutes in the lateral or knee-elbow attitude, in order to relieve the tension of pressure. As a preparatory adjunct this is especially valuable where the uterus itself is almost exclusively the seat of inflammatory and congestive disorder. With the patient on her back and a valvular speculum in situ, the os uteri naturally patulous or rendered so artificially, a double current catheter or similarly constructed uterine douche point, should be introduced up to the fundus and a stream of water, charged with the saline or antiseptic, of a temperature at first slightly in excess of that of the body, increasing to 120 degrees F., should be turned on from a fountain elevated but little above the plane of the patient's hips. Notwithstanding the ordinary sensitiveness of the uterus to injections, it is astonishing what a degree of toleration is thus quickly established, and how kindly the organ acts for a long time afterwards, rendering it doubly amenable to manipulation and the application of other desired agents. Such irrigation should be kept up steadily for at least twenty minutes or half an hour.

Although the irrigations thus described are in themselves anæsthetic, we are often confronted with conditions of hyperesthesia that absolutely prohibit manipulation of any kind. Under such circumstances an initial local anæsthetic or anodyne is an absolute necessity. When such is required in the medication of the female genital tract, I believe there is nothing equal in efficiency to cocaine. A ten-per-cent. solution, painted at first upon the mucous membrane at the introitus vagina, gradually encroaching upon the interior, where it is not so much needed, will quickly enable one to introduce the necessary instruments, and the patient to assume the relaxed condition desired as preparatory to efficient vaginal irrigation. Also, if a little of the same solution be injected into the cavity of the uterus it will prevent the disagreeable influence of the first impact of the irrigating stream on the interior of that organ, as also the mechanical irritation of the irrigator itself. In that way is met one of the very first and most important requirements in the direction of conserving local vital energy. Nothing so tends to an increased friction of discordant elements as nervous irritation and pain, and it becomes necessary under all forms of medication to provide as nearly as possible against this ever present contingency.

Now, I have dwelt thus fully on the foregoing methods of medicinal depletion, for the reason that they constitute the classic vaginal therapeutic douche of the general profession, and so clearly embody, probably, all of medicinal virtue in a certain sphere that their merits and demerits should be placed under the most rigid

scrutiny of those who have opportunity to study and know them best.

In further consideration of medication by the vaginal route, it is not possible for me, even if I would, to refer in detail to the proverbial thousand and one things that have been utilized for that purpose. They have been almost co-extensive with our Materia Medica. A few, however, as tamponade and douching (with which they are largely associated) stand out prominently to view, and challenge, so to speak, the notice and criticism of the profession. It is a few of these, typical in therapeutic character, that I wish to further consider.

It seems to me a perfectly legitimate and altogether commendable ambition to follow in this branch of medicine the trend of the nineteenth century advancement, in utilizing chemical, or chemico-vital elements and products, together with other dynamic influences, in a way to elicit if possible the natural self-defending activities of the organism, which unquestionably constitutes the true, rational medical therapy. That ideal, in which medicaments so act upon the nutritive, resolvent and constructive forces as to change their character and course from morbid into normal channels, without abrupt and violent, not to say destructive, interruption of the vital processes. But, with the few recognized agents of that class at our command have we even measurably reached that point in local medication? As to resolvents and absorptives, specifically speaking, we seem to have the nearest approach in the equally conventional and routine iodine and ichthyol. But what have they ever accomplished, and what can they be depended upon to do in this line in the therapy of the female genital tract? Used as the former generally is, it has in my observation accomplished but little if any good. Its reputation seems to have been based largely upon its well-known constitutional alterative influence. In the first place, the form in which it is applied is decidedly faulty, and handicaps any beneficial effect in the line proposed. The tincture usually used is almost useless for any purpose other than as a superficial stimulant and irritant, and when very strong as a light cauterant, suppressing exuberant granulations or superficial exudate. It is not soluble enough to be taken up by the adjacent fluids, percolated into the tissues, and placed so as to act in any specific way as a resolvent, and yet it is constantly applied with that end in view. It is a fact that the alcoholic element quickly evaporates and the iodine, in a metallic state, is precipitated upon the surface to which it is applied, thereby becoming absolutely inert and helpless, waiting to be cast off by exfoliation of the epithelium or adventitious exudate. To

be of any influence in the way and for the purpose contemplated, it seems but reasonable that this drug should be in aqueous solution, so that the absorbents, or tissues themselves by endosmotic action, can take it up and give it a chance to exert the alterative influence for which it is given credit, upon the deeper strata. Applied in such way, after a period of depletion, I believe it to be of great activity and value in inducing healthy, resolvent tissue change, by entering into and modifying the cell constituency in a way perhaps similar to the action of mercury in syphilis, or even that of the drug in question itself in certain phases of the same disorder. The unquestioned value of iodide of potassium in hyperplastic conditions, when conveyed into the tissues by the electro-endosmotic force, is due no doubt to the direct contact of the readily-soluble form of the iodine with the affected tissue.

Ichthyol is about the only other agent popularized in this line; especially instigated by the Germans. But how seriously the manner of using it in this country interferes with what true medicinal value it does possess! Certainly is it applied with no sense of proper therapeutic adjudication. In and of itself an agent of peculiar and intense penetrability and synergistic activity, it is usually mixed with glycerine, and at once, without due preparation, applied on tampons to the vaginal vault, with the false notion that it is thus in combination with its proper therapeutic companion. It is true that benefit is more or less constantly derived from it in that way, but it is rather in spite of than in consequence of the unholy alliance into which it has been forced. Used preferably pure, or in strong aqueous solution, in contact with a surface properly prepared for it by fair depletion and the removal of viscid secretions, it becomes, in both vagina and uterus, what it is destined to be used as, one of the most, if not the most, powerful resolvent agents and satisfactory anodynes and antiseptics that we possess, and one that will accomplish more in the reduction of inflammatory and congestive, not to say neurotic, pelvic disorders, than we at the present time probably apprehend. I can, from extensive personal experience, find nothing but confirmation of all that has been claimed for this remedy in the direction indicated, and I have no doubt that further investigation will reveal a valuable field for its application in some of the intricate affections of the local nervous system, over which it seems to exert at times a peculiar and gratifying soothing influence.

Having come to this point, I hesitate, knowing full well that I am about to tread upon dangerous ground. We all realize the fact that we have often to deal with surface and underlying tissues the seats of infection and its consequences, of long standing, with inter-

stitial changes of grave and obstinate character, sometimes extending much beyond the confines of the mucous membrane. These infections differ, as we all know, in nature and virulency, the uses and abuses of the genital organs rendering them specially liable to affliction of the kind. I have elsewhere (Detroit "Medical Age," Jan. 10, 1894, also "Sajous' Annual," Vol. 2, 1895), recorded some original investigations into the bacteriology of the female genital tract, and my conviction is, that by far the larger proportion of severe and extensive chronic inflammatory affections of the pelvic organs are due to gonorrhœa. Nevertheless, even the normal bacterial organisms of the cervical region may become pathogenic under certain circumstances. Whether that be so or not, the fact remains that there are conditions of inflammation and tissue change, of variable type, characterized by the presence and influence of infective elements so virulent, tenacious and veritably parasitic in character as to demand measures more intense in character and activity than those usually applicable in cases of simple inflammatory and superficially exudative disorder. At this point more strongly than elsewhere occurs a divergence of views. The man with the surgical bias wants to scrape, pack and drain. The man with the medical bias wants to cauterize. The former is confronted with the fact that no operation of relative magnitude has been accompanied with so many disasters and failures. To be efficient it must be done with thoroughness. To do it with thoroughness is now discovered to mean much in the way of exposure to further infection from interstitial infective nuclei. To pack is to retain elements of discord. Cauterization remains ofttimes practically the only alternative for protection, and is made to follow the surgical effort. The conservatively, or rather medically, inclined practitioner seeks to accomplish the same purpose by a repetition of the cauterant or escharotic.

I am now fully convinced that, barring the presence of fungosities and irregular growths, the method of cauterization is often the more satisfactory in the management of intra-uterine inflammatory and hypertrophic conditions, from whatever cause. Of recent years the profession has been the unwilling witness of the value of these agents as applied under the stress of public demand. The country is to-day flooded with, and the profession and women generally besieged by, the peddlers of scores of kinds or makes of wafers, capsules and tablets, consisting mostly of some powerful cauterant and astringent, masked under the protecting care of anodynes and antiseptics, to be introduced into the genital tract in all cases of presumed "ulceration," inflammation, catarrh, etc. The repetition of their use, with the synergistic influence of alternating hot baths and

irrigations, has unquestionably served to accomplish much in a curative way, and serves to teach us, as we have been taught before, the real position which should be given to the class of agents to which these bastard preparations owe their virtue. The acute observer can readily see not only the value but the rationale of this procedure. It is in just the class of cases not amenable to the milder measures that this form of treatment gives its most brilliant results. The cauterant, under the influence of the associated anodyne, with comparative painlessness, removes as it promotes, slowly but surely, layer after layer of adventitious tissue, destroying not only the parasitic cell-life at once within reach, but by directing the vital energies of the part to the immediate locality, throws up a barrier of leucocytic or other protecting elements, as well as furnishes at the same time a kind of depletion that really depletes, in that it carries away, through application after application and exudate after exudate, not only serum, but the surplus cellular elements, and with them the abnormal organisms with which they are infected, and which have been thus drawn into this vortex of pathogenic turmoil. No one is yet able to define the occult influences at work in cell formation and activity, as, for instance, in the epithelial proliferation and infiltration of carcinoma, and form and feature are not always in evidence, even as for or against morbid action. There are no doubt many vicious tendencies in cell life that we are not able to recognize in any other way than through disordered function. Aberrations in intimate structural development are yet beyond our ken, and in many cases of uterine disease associated with inflammatory complications I am convinced that such is the case, and that when we act upon the overshadowing principle of antisepsis, either by surgical extirpation, or the medical inveiglement and destruction, as applied to the adventitious formations, we are acting with equal justice, and in harmony with the best interests of the patient. I am compelled to admit my full conviction, after many trials and observations, that if as much attention were given to obtaining an accurate knowledge of the nature and use of cauterants, or escharotics, as is and has been given to the development of surgical procedures and technique, we would to-day be in the possession of means and advantages that we do not now have, and such as would revolutionize gynæcological practice. For the very reason that such objects have not been definitely and systematically pursued in the light of modern pathology and hystogenesis, no authoritative decision has yet been reached respecting the most desirable form of cauterant for the purposes described. I suspect that when it is decided upon, it will be in the nature of a mixture or compound

of some two or more of the at present well-known chemicals, but that, as in the case of surgery, their effective application must involve the expert and artistic personality of the operator. As for myself, I have found infinite satisfaction in the milder cases in the use of saturated solution of permanganate of potash, applied with a swab, and in those of more earnest type by the use of the zinc sulphate, reinforced, if need be, by a small percentage of the zinc chloride. This combination, in proportion suitable to the result desired, all the way from simple removal of the epithelial coat to extirpation of a bed of hypertrophied and extraneous tissue, can be applied in aqeous solution to the interior of the uterus, for example, where the action is most needed, protecting fully the cervical canal by the introduction into it of a pledget of cotton covered with an ointment of bicarbonate of soda in vaseline, or may be rubbed up in oil and then applied, thus wonderfully modifying not only the intensity but also the rapidity and character of its action. In this way a beautiful and satisfactory result may be obtained in the most formidable cases, if the depleting influence of hot irrigations has been resorted to and continued, which so prepares the parts as to measurably form a line of physiological demarkation to which the cauterant seems largely to limit its action.

Now, whether it be an evidence of weakness or of strength, I am willing to put myself on record as an advocate of the intelligent and thoughtful use of caustics in the treatment of a certain line of maladies afflicting the female genital tract. Located as I have been, it has become an imperative duty to, if possible, adopt and devise ways and means other than radically surgical for cure of many of the affections of the kind referred to, and I have become fascinated with the effort and its results. While I have not had the opportunity of much observation post-mortem, or after hysterectomy in cases with a clear history of cauterization, and do not know exactly what is the relative anatomical difference in the subsequently-formed endometrium, if any, I have watched as closely as it seems to me any one could, and have never found any more evidence of functional disturbance of any kind after the judicious use of caustics, than after surgical procedure.

In conclusion: The strictly professional and personal attention necessarily involved in the course of treatment herein outlined is the only objection to it that can, it seems to me, be properly urged. That objection must necessarily continue to obtain. In the light, however, of its peculiar efficiency in restoring health and maintaining integrity of function, there would seem to be no thoroughly justifiable reason for rejecting its widespread application, excepting in

the case of dependents on the charity of the profession and the public. I have personally conducted a large number of cases through this course of treatment, overseeing all details, and although it can best be accomplished in hospital, it can be effectively done outside, with the intelligent co-operation of the patient, and with the most surprising results in the way of acquiescence on the part of the organism and restoration of health. Strict attention to detail throughout is as necessary, especially in connection with intra-uterine applications, in this course of treatment as in that involving careful surgical technique, and the result equally representative of the care bestowed.

THE ABUSE OF TOPICAL APPLICATIONS TO THE ENDOMETRIUM.*

By Samuel L. Weber, M.D., Chicago.

I have been led to write this paper by observation that I have frequently made of cases of severe tubal infection following applications to the endometrium. Salpingitis, pyosalpinx, pelvic peritonitis and adhesions are of very frequent occurrence. I have read all works on pathology, that have been accessible to me, written prior to 1860. Before that date gynæcology was hardly a specialty, and topical applications to the uterus were hardly known and made. Although nearly all of these older works record the existence of inflammatory lesions of the uterine adnexa and of the pelvic peritoneum, yet but brief accounts of these is made, and the brevity and lack of emphasis plainly indicate that these were considered rare lesions. Only one, Rokitansky, gives a good and sufficiently detailed account of such lesions; and even in his book one plainly gathers that these are mostly of post-puerperal of septic origin. The enormous frequency of these lesions as they occur now, could not have existed at that time or they would have been described with greater detail and emphasis.

It is true that the much more frequent practice of criminal abortion of late years accounts for some of the increase in the number of cases of disease of the uterine annexa; but, how many of these cases are the direct result of intra-uterine medication? Gonorrhœa was as frequent then as now. Has not gynæcology caused as much suffering to women as it has relieved? I am well aware that intrauter-

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* Read. For *Discussion*, see page 213.

ine medication is not practiced as much now as it was ten and twenty years ago. Is it not practiced too much now? I think it is, and even by well-educated and well-trained gynæcologists.

The trouble is that we know so little as yet about the exact etiology of endometritis. Recent bacteriological work has shed much light upon the subject. More exact clinical work has shed still more. Most of it, however, is yet in the dark. Classification of the various forms of uterine infection is still indefinite and very unsatisfactory, as witness various recent works and various recent papers read in this and in other prominent gynæcological associations. I think we must consider, to-day, all forms of endometritis as septic; that is, the lesion or lesions present are caused by or in some cases maintained and intensified by bacteria. This is true of inflammations, acute or chronic, of any mucous membrane. Although proven in only a certain number of cases, the bacterial origin of inflammations of all mucous membranes, including the endometrium (except certain cases due to chemical insults) must be assumed in order to conform to the teachings of modern pathology.

A classification of the various forms of endometritis, which, though crude and unsatisfactory, but sufficient for the purpose of this paper, is the following: *Acute septic*, following labor, abortions and uncleanly operations within the uterine cavity. *Chronic septic*—an indefinite group, including cases succeeding the acute stage of acute septic, cases due to retention of fragments of placental or decidual tissue, and cases of endometritis caused and maintained by large infected lacerations of the cervix.

Acute gonorrhœal; chronic gonorrhœal, which is almost always a mixed infection; *chronic catarrhal*, a very large group, caused and maintained by diverse conditions. For the purpose of this paper, I must also consider in a separate class cases of endometritis, complicated by chronic inflammatory lesions of the tubes. Parenthetically, I may say, that I do not for one moment ignore that in all these inflammatory affections of the endometrium, the whole uterus is more or less involved. Tubercular, malignant and syphilitic endometritis being comparatively rare and only expressions of a deeper seated trouble, are not here included.

Acute Septic Endometritis.—In competent hands this is not treated by topical applications, and therefore need not concern us for the purpose of this paper any further. Irrigations with weak solutions of antiseptics are not considered topical applications.

Acute Gonorrhœal Endometritis.—Under this heading we may consider acute, subacute, and chronic gonorrhœal endometritis, so long as the infection is not a mixed one. Clinically, it is very often im-

possible to distinguish between the different stages, the subacute and the chronic inevitably following the acute. The impression prevails that in the majority of cases of gonorrhœal infection in women, the urethra and vulva are primarily alone involved. This is true in children and violated virgins. In females accustomed to coitus, it is the cervix which is primarily infected in the great majority of cases. In the large per cent. of the remainder the vulva and the uterus are infected simultaneously. If the latter is the case, the symptoms complained of are mostly due to the vulvar inflammation; the uterine infection giving much less suffering, is for the time being overlooked, and comes into prominence only after the subsidence of the inflammation of the vulva, and is then ascribed to extension upwards of the gonorrhœal infection. Gonorrhœal infection of the uterus rarely gives rise to severe symptoms. Backache, somewhat frequent urination, fullness in the pelvic region and the vaginal discharge is about all that is felt by the patient—rarely a little fever. Extension of the gonorrhœal infection may be downwards as well as upwards, and it is much more frequently downwards than upwards. The cervix is the seat of primary infection in the majority of cases. The outflowing discharge then infects the vagina, Bartholin's glands and other parts of the vulva, and frequently also the urethra and rectum. The infection has meanwhile, in perhaps all cases, extended to the whole endometrium.

In an untreated case, or, in a case in which only cleansing and palliative measures are employed, how frequent is extension of the infection into the tubes? I believe such extension, in the sense of a gonococcus infection is rare. I do believe, however, that in all cases in which the whole endometrium is infected by gonorrhœa and the infection is an acute one, the fallopian tubes are affected, and affected right from the beginning. Whether this primary tubal affection is gonorrhœal or is merely a congestion, is still a question. In the male we have an analogous condition. In acute anterior urethritis, if severe, there is a congestion of the posterior urethra. Post-mortem bacteriological examinations of either conditions are not at hand, as the disease is not a fatal one.

We have, then, in acute gonorrhœal endometritis, a gonorrhœal infection of the whole endometrium, with more or less congestion of the tubes. In a few cases the symptoms are severe enough to keep the patient in bed. In the majority of cases the disease is, as far as the symptoms are concerned, subacute or chronic from the beginning, the patient not confined to bed. It is in the ambulatory cases in this class of endometritis that the treatment attempted by the vast majority of physicians is by means of topical applications,

and it is especially in gonorrhœal endometritis that, in my opinion, so much harm is done by this method of treatment.

One moment to a consideration of the medicaments which are used for topical application. The list is a long one. The prominent ones are chloride of zinc, carbolic acid, iodine, iodized phenol, nitrate of silver, bichloride of mercury, persulphate of iron, tannin and iodoform. These medicaments are currently divided as caustics, antiseptics, astringents and alteratives. Now taking into consideration that all forms of endometritis are bacterial diseases, that especially in the gonorrhœal and septic cases, which comprise the large majority of cases treated, the bacteria are the sole inciting and maintaining cause of the inflammation, and bearing in mind the histological structure of the endometrium and the consequent thickness of tissue invaded by the bacteria—taking into consideration these pathological facts, it is wholly inconceivable how any action can be expected from these drugs except an antiseptic one. All topical applications to inflamed tissue, if they are to have any curative value, must have it by virtue of an antiseptic action. This is further true of all remedies for infectious diseases. A remedy in an infectious disease must do one of two things: it must either destroy the causative micro-organisms, or it must sustain or strengthen the resistant power of the tissues. All of the remedies used as intrauterine applications are strong, irritant, and caustic chemicals. Hence they cannot and do not assist the defensive powers of the uterus. They can act then only as antiseptics, and as antiseptics we must consider them all, even applications of strong chloride of zinc, which destroys the tissues together with the bacteria, something like burning down a house to destroy the vermin which infest it. We must consider them, however, not only as antiseptics, doing good as antiseptics, but also as irritants, doing harm to the tissues; that is, lowering their vitality and hence their resistant power, in so far as they are irritants. The question as to their utility then resolves itself into this: do they do more harm than good or more good than harm? They must do much more good than harm to be of use in curing the endometritis. If they do as much harm as good they are useless, and if more harm than good they are a positive injury and aid the bacteria in their ravages. Recalling again the etiology of the diseases under consideration and the thickness of the tissue invaded by the gonococci, it must become apparent that a surface application of these irritant and caustic antiseptics (none of them having a penetrating power beyond their caustic zone) cannot reach and destroy the bacteria in the depths of the tissue.

We are, then, by making applications of these medicaments in

gonorrhœal endometritis only adding injury to injury, lowering more and more the resistant powers of the tissue in the toils of the gonococci and their toxines. No wonder that a rapid extension of the disease takes place so frequently in gonorrhœal endometritis treated by topical applications. Remembering also that a congestion of the tubes is already present, inviting and facilitating the extension of the gonorrhœal infection into them by continuity, I firmly believe that a very large percentage of salpingitis and pyosalpinx are the result of treatment of the pre-existing gonorrhœal endometritis by applications of the commonly-used medicaments.

The following is furthermore an ever-present danger: An unmeddled recent gonorrhœal endometritis is a pure gonococcus affection. The manipulation of making topical applications introduces almost invariably other bacteria, producing a mixed infection. The application is scarcely ever made in a perfectly aseptic manner. The conversion of a pure gonococcus infection into a mixed infection changes at once the potentialities of the trouble. If the gonorrhœal endometritis was acute in severity as well as in time, the mixed endometritis produced may give rise to as severe symptoms as acute septic endometritis does. I have seen, it is true, such acute mixed endometritis occurring without any intrauterine treatment. Such an acute mixed-infection-gonorrhœal endomitritis probably never has the potentialities of an acute septic endometritis following labor or abortion, for in the latter there is possibly a vaginal and systemic infection through the lymphatics and blood vessels, while in one originating from a gonorrhœal endometritis the extension is confined to one of continuity; that is, into the tubes and thence to the pelvic peritoneuma. It is these secondarily-infected cases of gonorrhœal endometritis, which give us our worst cases of pelvic abscesses and adhesions.

Before dismissing this brief outline of the possibilities for harm from local treatment of acute gonorrhœal endometritis, I wish to say that there is considerable analogy between acute gonorrhœal endometritis and acute anterior urethritis in the male. In both, injudicious local treatment causes an extension of the infection; salpingitis, etc., on one hand, and posterior urethritis, with its possible further extension to the deeper portion of the prostate, to the seminal vesicles and to the epididymis, on the other hand. Without meddlesome local treatment neither would extend so commonly to these deeper parts.

Chronic Septic Endometritis.—In this group of endometrium infections, for the same reasons as were stated under acute gonorrhœal endometritis, topical applications can do but little good. None of the

available medicaments penetrate deeply enough to destroy the bacteria. We cannot do as much harm in this class as in the above one, for the cocci are attenuated if the infection is chronic, and the tissues have recovered from the first shock of the attack by the bacteria, and have now marshalled all their natural means of defence. An extension into the tubes or into the lymphatics is only possible if the application is made in a very dirty manner and the medicament chosen very inappropriate to the case. The harm that is always done is that we are wasting time and the woman continues to suffer. We have in the curette and repair of the cervix, if that is indicated, a rapid method of terminating the trouble. The question of time is an important one in many cases of chronic pelvic disease in women. The invalid habit is so easily acquired by women with uterine troubles. Any number of neurotic and morbid women are graduated out of gynæcologists' offices after taking a course of "treatments" for their womb. We cannot be too careful about this. It behooves a physician to cure his gynæcological patients as rapidly as possible. All tedious plans of treatment of pelvic diseases jeopardize the mental balance of the patient, just as chronic pelvic diseases themselves do.

Chronic Gonorrhœal Endometritis.—If the gonorrhœal endometritis has existed for some time it has become a mixed infection. Further, just as in the last-described form, the gonococci and the other bacteria have become attenuated and the tissues have rallied, and are making an effort to destroy the bacteria, and have at least succeeded in checking the extension of their ravages. Topical applications in this class of cases are also wholly ineffectual to destroy the micro-organisms for lack of sufficient penetrating power to act on the bacteria in the depths of the tissue involved. The irritant medicament may, however, depress the vitality of the endometrium so as to make it again a sufficiently good medium for the gonococci, which will then regain their virulence. We thereby may convert a chronic gonorrhœal endometritis into an acute one. The acute gonorrhœal endometritis so produced (acute as to possibility of extension of the infection), we must bear in mind, is an acute mixed infective one. The gonococci infect the tubes and the other bacteria follow. In this group of endometritis we may in this way, by topical applications, produce severe cases of pyosalpinx and pelvic inflammations. The treatment commonly pursued in chronic gonorrhœal endometritis is by topical applications, and a very large number of pyosalpinx cases are thereby made.

Although the scope of this paper does not include the treatment of endometritis, yet I wish to say that in all cases of chronic en-

dometritis of purely bacteriological origin, curettement is the proper treatment. Curetting the uterus removes most of the thickness of the endometrium, leaving only a thin layer of the membrane behind. Now, following the curettement, antiseptic applications may be made with the expectation of penetrating the thin layer of the endometrium left, and thus reaching and destroying all the bacteria. It is frequently necessary to curette a case several times in comparatively rapid succession, each curettement followed by several applications of strong antiseptics, the desirable ones being such as remain on or in the affected tissue for some time—hence the value of iodine and iodoform. In all of these cases it is the antiseptic applied and not the currettement which is the essential factor in the treatment. This subject is so commonly misunderstood.

Chronic Catarrhal Endometritis.—Under this heading may be brought cases of endometritis originating from diverse distant causes. In most of these cases the trouble began as a congestion of the endometrium. The congestion lowered the vitality of the endometrium, making it a tissue easily infected. We know that the cavity of a healthy uterus is sterile, and we further know that bacteria of low and high grade of virulence are abundant at all times in the vagina and cavity of the cervix. So long as the endometrium is healthy no bacteria except the gonoccoccus can become parasitic in it. If, however, the endometrium, as in this class of cases, becomes congested and its vitality is thereby lowered, saprophytic and parasitic micro-organisms can thrive in it, and an inflammation is set up. A case of congestion of the endometrium, therefore, is soon changed to inflammation of the endometrium—to a true endometritis—a catarrhal endometritis. We have, therefore, in this group, two causes at work, the distant one and the bacteria. A treatment confined to either cause will not cure. The distant causes are: (1) congestion of the endometrium, due to malpositions and adhesions of the uterus interfering with its normal circulation; (2) congestion of the endometrium, due to tumors of the uterus, annexa or neighboring parts; (3) congestion of the endometrium, due to heart, kidney and lung diseases; (4) lowering of the normal vitality of the endometrium by constitutional dyscrasias such as the anæmias, tuberculosis, diabetes, etc.; (5) lowering of the resistant power or production of a congestion, due to imperfect metabolism (lithæmia) or to deficient excretion from the body (leucomaine poisoning in imperfect intestinal digestion or deficient excretory function of the kidney).

In all of these cases topical applications can do but little and only a temporary good. Harm may be done by irritating the already

diseased endometrium and so intensifying the degree of inflammation. An immense amount of wasted effort is being expended in treating these cases by topical applications to the endometrium; a corresponding amount of disappointment falls to the physician and to the patient. The distant or predisposing causes must first be treated and if possible cured. After that is accomplished then the local condition can be treated. If the endometritis is of mild degree, proper locally-applied medicaments may be effective and sufficient.

In conclusion, it is necessary to consider as a separate group those cases of chronic endometritis of whatever origin, which are coincident with chronic salpingitis. In these cases, of course, the endometritis preceded the salpingitis. The endometritis was a severe one at one time. During the acute stage of the salpingitis and accompanying pelvic peritonitis, the symptoms of the endometritis were entirely masked by the very much more severe ones of the salpingitis. But now the symptoms due to the salpingitis have almost subsided, and those of the endometritis are demanding attention. Are these cases of endometritis to be treated by topical applications? Can topical applications do any good? May they do harm? Good they cannot do, for reasons already given. Harm and frequently very much harm can be done. The irritation and mechanical insult to the tissues, due to the local application, may and does intensify the inflammation. The already present bacteria become more virulent, and other virulent bacteria are inoculated in the diseased endometrium, being carried in during the application. As a result the endometritis becomes worse; and, worst of all, new infective material is thus introduced into the inflamed tubal cavity. The salpingitis again becomes more or less acute. This is the explanation of many so-called recurrent attacks of salpingitis or recurrent attacks of pelvic peritonitis, as it is commonly called.

In this numerous class of cases all local treatment to the endometrium must be deferred until the salpingitis has subsided, and gives but very little trouble. Then, through curettement, followed by proper antiseptic applications, is the treatment of the endometritis.

100 State St.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, March 19, 1897.

The *Vice-President*, HENRY P. NEWMAN, M.D., in the Chair.

Urethral Dilator.

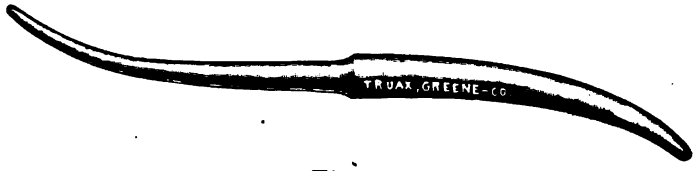

Fig. 1.

Dr. HENRY T. BYFORD: This new dilator is all in one piece. It is slightly tapering, and will dilate the female urethra sufficient to enable one to introduce the urethral speculum or cystoscope, or even, if necessary, the finger. It tapers from No. 10 to No. 50 French scale. The reason I had this model made was that I noticed in dilating the urethra the meatus is smaller and more resistent than the deeper portion. When the meatus is dilated sufficiently by a slightly tapering sound, the rest of the urethra, being elastic, will readily allow the passage of the cystoscope.

Whalebone Ureteral Guide.

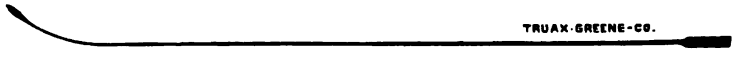

Fig. 2.

This instrument is particularly useful when one is going to operate in the pelvic connective tissue and wants to know where the ureter is while operating. It is made of the proper size, and the point has the proper resistance. I have noticed that by first introducing this ureteral guide pathological conditions in the pelvis could be more easily mapped out. For instance, I had a case of carcinoma with considerable induration beside and behind the cervix. I at first thought the case unfit for operation. The cervix did not, however, seem as badly affected as it ought to be in order to cause so

much trouble in the parametrium. I sent the patient to the hospital and promised to do what I could.

I introduced the ureteral searcher. It went under the broad ligament, and by palpation I could feel that the tubes and ovaries were adherent to the broad ligament entirely above the ureter, and easily diagnosed disease of the appendages with adhesions and exudate. The case proved to be one of pyosalpinx and carcinoma of the cervix without participation of the parametrium. If I had not tried this experiment I should not have been able to have appreciated the decided advantage of the ureteral searcher in differentiating between parametric and perimetric induration. The only objection to it is that it cannot be boiled.

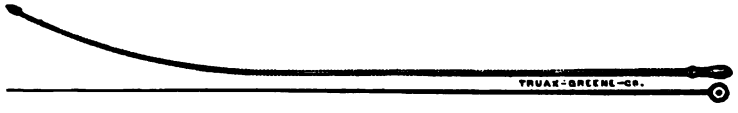

Fig. 3. Spiral Ureteral Sound.

Here is another similar instrument. It is a flexible ureteral spiral sound, and is somewhat similar to the Jenks uterine spiral sound. It can be used for the same purposes as the whalebone searcher, and will easily take a curve without doing any injury to the ureter. It is made of steel and will stand boiling. In one case I left it in the ureter while I removed the uterus per vaginam. It showed me that I was operating very near the ureter while ligating the broad ligaments.

Medical Therapy of the Female Genital Tract.

By O. B. Will, M.D., Peoria, Ill.

(See page 194.)

The Abuse of Topical Applications to the Endometrium.

By Samuel L. Weber, M.D.

(See page 204.)

Discussion.

Dr. Henry T. Byford: I shall briefly discuss the papers from the standpoint of my own experience. I cannot say that all of the deductions drawn by the last essayist have corresponded with my

experience and the results of my treatment. As to septic tubal disease or pyosalpinx arising always from topical applications, I do not think it can be clearly demonstrated, because in a number of cases that have come under my observation—and I have had quite a number of cases to deal with of which I knew something about the history—the patients never had topical applications made. Several of the cases occurred in young girls and in women who had never been subject to sepsis in any way that I could determine. A great many cases occur in young women in which there is no history of infection, and we find on examination no septic germs of the kind referred to, in the uterus.

With regard to the action, there are two conditions which should be recognized, and which were well brought out in an excellent paper read last month by a member of the Society. We should make a distinction between hyperplasias and inflammations, giving the hyperplasias a separate position from the infections; in other words, we must consider them as not connected with specific infection, although in many cases such infection have gone before. It is for the purpose of curing the hyperplasia, and not sepsis, that we make uterine treatment in a great many cases.

I think the condemnation of glycerine by the first essayist was hardly logical. We know by experience that glycerine tampons do afford temporary relief in some cases. With reference to the theory of its action, it is supposed to relieve congestion by abstracting water from blood vessels and tissues. The writer maintained that the solid constituents would be left. I have always supposed that if we remove the fluid from the capillaries they will contract and the circulation will go on more normally, and the more solid constituents of the blood will be carried into the general circulation. If there is venous obstruction, then the abstraction of the fluid portion might theoretically do harm.

With regard to the action of hot water, I think the remarks were just, except that too much importance was given to it. If you have a cold in your eye and resort to hot douches, they will relieve it very much. But if inflammation has lasted for any length of time, as uterine inflammation usually has, the hot douches will not be of much curative value. It does, however, afford some relief in temporary congestions and exacerbations.

I do not believe that I have ever seen very much good from the application of tincture of iodine. I have seen it do good as an antiseptic, applied locally to the cervix, but I do not think it possesses the qualities claimed for it. If we have an acute infection we should not make strong applications. We want first of all to drain. If we

make local applications within a uterus that is not drained, the condition is made worse. The idea is to wash out or clean out the germs, and not to irritate the tissues. We should be sure that the cervix is properly dilated for the purpose of introducing an irrigating tube to wash out.

A practical point, however, in connection with the treatment of intra-uterine affections is that as a rule the original infection does not remain long. In many cases we can find no specific germs we are then called upon to relieve the hyperplasia that is present. We cannot do it merely by cleaning and washing out the uterus. We must do something that will produce absorption of effusion, that will coagulate and contract the blood vessels and if necessary destroy some of the tissue. We get this effect from the use of astringents and escharotics rather than from the tincture of iodine. In a case of a young girl in which there is a great deal of hemorrhage it may be possible to curette off a sufficient amount of the substance of the endometrium to cure the disease. Curetting does not, however, cure the disease in all cases, and in such instances we may be obliged to use local treatment afterward.

I have in my mind now a case of the worst kind of dysmenorrhœa in a young girl which lasted for years, although she had for a long time received the ordinary local treatment. And I take this opportunity to condemn the *ordinary* local treatment, believing that in nine cases out of ten the proper treatment is not properly given. In this case a thorough curettage had no effect upon the dysmenorrhœa. After three or four months I began making local applications twice a month of a forty-per-cent. solution of chloride of zinc, and she began to get better, and improved each month until she ceased to complain. In making local treatments I use the same care as for an operation. The patient takes a douche before she comes to the office. I swab out the cervix and fornices seven or eight times with a five-per-cent. solution of carbolic acid. I keep using it until there is no sign of turbidity of the solution, and then dip one of my dilating sounds into a five-per-cent. solution of carbolic acid, and progressively dilate the cervix until a No. 12 or 15 English or American sound can be introduced. I am now prepared tc make my treatment, and I do it with extreme care. When these applications are made with care in cases in which there is no disease of the appendages, I do not see how they are going to hurt the appendages. I had a patient with a gonorrhœal salpingitis and ovaritis with adhesions. There was pus in both the tube and ovary. I removed the tube and ovary. After that I kept the cervix dilated in the manner spoken of, and used mild applications to the endo-

metrium. The woman became pregnant in a year or so thereafter, and bore a child, and has been well since. In this case I think that the local applications completed the cure.

I think that the usual objections to local treatment are applicable to the usual treatment made by the general practitioner, but they cannot be properly made to the proper treatment.

Dr. JOSEPH B. BACON: I am pleased with both of the papers because they treat of important points. The paper of Dr. Weber deals with a more acute infective process, while that of Dr. Will dwells more upon chronic troubles. I have known Dr. Will for a long time, and know how painstaking and careful he is, and I believe the results that he speaks of prove it. I believe if the profession will try the treatment outlined by Dr. Will they will profit by it, particularly those members of the profession who do not practice asepsis and antisepsis. It is necessary to observe a good deal of care and caution in carrying out intra-uterine treatment. I began to practice gynæcology in a country district, and it was some years before I made intra-uterine applications because of the danger of infection. At that time very few country practitioners knew how to use intra-uterine applications aseptically, consequently there were many cases of pelvic inflammation as soon as patients fell into the hands of the physician in the country. I did not use intra-uterine applications until I learned how to do so from Dr. Byford. Dr. Byford touched upon an important point when he said that we should see that the cervix was sufficiently dilated, and be sure that we establish thorough drainage if we make intra-uterine applications.

I cannot agree with some of the statements made by Dr. Weber because they do not harmonize with my experience and practice. Some of the cases of pyosalpinx and of pelvic inflammation that have come under my care have not been treated at all. This was also my experience when engaged in general practice. Some of the worst forms of salpingitis, of pyosalpinx and periuterine inflammations with exudate had occurred without any previous treatment. Some of these cases happened in country districts, the patients not being in the habit of using vaginal douches. My experience covers the period since 1879, at which time vaginal douches were not as common as they are to-day. It is only within the last ten years that these douches have been used with greater frequency.

Dr. Weber's ideas with reference to the treatment of acute gonorrhœa are very good. The practitioner who resorts to meddlesome treatment will sooner or later get into trouble, and a patient is better off very often without any treatment. Those of us who have treated acute gonorrhœa in the male know that there are cases in

which there is a reflex spasm of the neck of the bladder. A young practitioner who has not had much experience or has very little knowledge of pathology might come to the conclusion that a stricture had formed, and the patient being unable to avoid urine on account of the spasm at the neck of the bladder, might go to work, thinking he had a stricture to deal with and pass a sound, when a serious form of cystitis would follow.

Dr. C. S. BACON: There remains one or two points to be considered. Dr. Will has rendered us under obligations to him for presenting a subject which ought to receive consideration every year or two, in order that we may find out where we stand in regard to the use and indications of medical measures. I am, however, somewhat in doubt as to the propriety of the term "medical therapy" as applied to the local treatment of the genital organs. When reading the announcement of the paper I expected we should hear discussed the subject of medicines, such as ergot, hydrastis, etc. The restriction of the surgeon to the use of the knife or the curette, and the consignment of local treatment to the physician is a somewhat questionable use of terms. I consider cauterization of the uterus or local application to the uterus or to the vagina a minor surgical procedure.

To deny the value of the glycerine tampon, which has such a well recognized place in gynæcological therapeutics, I think requires a more elaborate discussion of the pathology of the uterine trouble, and of the method of action of the glycerine. Enlargement of the uterus and the congestion which increases its weight are conditions that may be due to an excessive amount of fluid not only in the blood vessels, but also in the lymphatics, and the glycerine may perhaps act also by emptying the lymphatics. The glycerine tampon also acts somewhat as a support to the uterus, lifting it up, if properly placed behind the cervix, where it acts as a pessary, and the improved position of the uterus may help to relieve the circulation and diminish the uterine congestion and size of the organ. So I doubt whether the theoretical objections which were raised to the use of glycerine tampons are sufficient to counterbalance the good effects found to be the result of general practice.

The value of the douche depends very largely upon the manner in which it is given. The position of the patient is of extreme importance. Another detail which was not clearly specified was the degree of heat of the douche. Water at a temperature of 105° has an entirely different effect from water used at a temperature of 115°. This is very well illustrated in the use of hot water injections in the treatment of post-partum hemorrhage; while a douche of 105° is of

no value, a douche of 120° is an extremely valuable stimulant to uterine contractions. The same thing holds true of the douche in the treatment of an enlarged, congested uterus or a uterus in a state of subinvolution following either abortion or labor.

The advantage of the use of the curette depends to a considerable extent upon the details and management of the after-treatment. In a case of infection the curette does not remove the pathogenic germs; it does not remove all the infected mucous membrane. It has been shown by the recent investigations of Prof. Werth that islands of mucous membrane remain. The curette used as an agent against infection, or as a measure in the treatment of uterine hyperplasia, can be considered only as a preparatory measure, which is to be followed by the use of hot applications, caustics, or other applications to the uterus. I believe that the failures in the use of the curette are very largely due to the fact that it is used alone, and is not followed by efficient after-treatment.

I am disposed to emphasize the position of Dr. Weber that the local treatment to the interior of the uterus is often very dangerous. How many of the semi-professional gynæcologists consider it necessary to sterilize the sound and the speculum after treating one patient before treating another? How many have facilities for doing that? How many have a sterilizing apparatus where the instruments can be at once boiled after one patient is treated before treating another? Very few, and the result is one patient is infected by the instruments used in the treatment of the preceding patient. I believe Dr. Weber approaches this subject in a right way by considering each kind of infection definitely, as well as its treatment, not speaking in general of the treatment of uterine inflammation or of uterine treatment, but of acute gonorrhœal infection, of chronic streptococcus infection, etc.

One point should always be emphasized in such a discussion as this, because it is not frequently considered, namely, the necessity of a bacteriological examination to determine the presence of gonorrhœal infection, as well as the progress of the treatment. The ease with which such examinations can be practically made, as well as their importance, is so great that they should always be carried out.

Dr. M. L. Harris: My experience in topical applications to the interior of the uterus is not very extensive, and my remarks will emanate largely from a general surgical point of view. We must all admit that the inflammations spoken of here to-night are due to the presence and growth of pathogenic microbes. If there is one point toward which modern scientific investigations inevitably lead

us, it is to the fact that we must depend absolutely upon the vital action of the living cells to overcome the invasion of all microbes. The study of immunity, of serum therapy, of asepsis and antisepsis in surgery inevitably leads to this conclusion. This being a fact, anything which destroys the vitality of the cells, whose duty it is to overcome infection at the time, must absolutely do harm. This fact was recognized long before it was formulated into a law by the most experienced teachers when they stated that in acute inflammations we should omit the topical application of anything which might act as an irritant. It has been said that in cases of acute gonorrhœa we should use no injections because they are destructive to the cells whose activity should be increased instead of diminished. There has been no dissenting voice on this point to-night, so far as I have heard. The reason is, we have as yet no germicide which we can apply topically that does not have a harmful effect upon the cells, consequently the germicide failing to come in contact with and destroy all the microbes, destroys the cells, and the result is disastrous. We have a forcible illustration of this in the recent remedy brought forth for the cure of gonorrhœa, argonin. Two valuable points are spoken of regarding this remedy. First, it is a non-irritant; second, it has a germicidal effect upon the gonococcus. That is why the results in the acute stage have been so favorable. And it is likewise known that after the acute stage is over argonin has but little effect because the gonococcus is now beyond its reach. I think that the routine use of topical applications is more harmful than good. I gather from the remarks of Dr. Byford that he had in mind, when he said he would not attempt to explain certain points, that we must depend upon the vitality of the living cells to overcome the infection and not upon the topical applications. Am I right ?

Dr. Byford: Yes.

Dr. Harris: This is a fact which is being impressed upon us more and more every day, and it is the line upon which we must work to obtain the best and most beneficial results. Not to act by agents which destroy the cells, but by agents which increase the activity of the cells in the particular line of overcoming and destroying invading microbes.

For these reasons I think the paper by the second essayist, Dr. Weber, contains much the greater germ of truth.

Dr. John T. Binkley, Jr.: The results obtained by Dr. Byford are, I know, superior to those obtained by the average practitioner. Dr. Byford observes every little detail in connection with his work. He is most painstaking and careful, so much so that I do not believe many practitioners carry out details to the letter as he does. I

believe this to be true after having observed his work as well as that of others. Dr. Byford is extremely painstaking in preparation for local applications. He thoroughly disinfects the vagina, as he says. always with a five-per-cent. solution of carbolic acid. This he did when I first became acquainted with his methods, and I presume he has improved upon them since then. Thorough disinfection of the vagina is followed by careful disinfection and dilatation of the cervix with graduated sounds, so that he has prepared a clean field for making his applications in a scientific and skilful manner.

There were one or two points brought out in Dr. Will's paper that I would criticise. I do not understand how Dr. Will knows he gets this physiological line of demarkation after the application of strong chloride of zinc solutions. He referred to several cases which he treated, but I failed to hear him say what kind of cases. I presume he referred to cases of various forms of endometritis. We frequently arrive at our conclusions and make our deductions by analogy.

Dr. Will's description of hot water applications is to my mind an excellent point, and I am thoroughly convinced of their efficacy. A case in point. Recently a farmer, while working in a planing mill, sustained an injury of the hand. The hand was badly mangled. He was brought to my hospital, and the middle of the hand, three fingers and the extensor tendons were all laid bare. The hand was enormously swollen. Hot applications to the hand in a comparatively short time produced absorption of the deposit, and nothing but hot applications cured the hand. The man's hand was temporarily dressed at the time of the injury by a physician near by without cleansing it, although the physician had used iodoform freely all over the hand, and the wounds were covered up so that there was no drainage. The hand was very dirty. Before resorting to hot applications the hand was scrubbed.

Not long since I had a case of strangulated hernia in a woman sixty-seven years of age. The sac was as large as my two hands, the omentum was gangrenous, and all the tissues above and below, all the inguinal glands down to the inside of the thigh were infected. I removed the glands, left the wound entirely open. There was general infiltration and œdema of the whole anterior aspect. Hot moist applications, changed every half hour for days, enabled me to save that woman's life. The temperature of the water used was from 115° to 120°.

Flushing the vault of the vagina with copious hot douches, with the woman in the position Dr. Will describes, is the best course to pursue. These douches stimulate uterine muscular contractions

and cause increased circulation. The method of making topical applications with the extreme care that is exercised by Dr. Byford will no doubt in many instances give satisfactory results. I notice the whole trend of the discussion has been in defense of topical applications in those cases that have not been infected. How do we know that other irritants have not been used? How do we know what pernicious habits have obtained in those cases? Perhaps the infection in some of the cases was due to a previously-existing gonorrhœa, and not to the use of unclean instruments. We sometimes arrive at conclusions too rapidly. The gynæcologist does not receive money enough to undertake the work of making a differential diagnosis in individual cases in a thorough and scientific manner. He cannot take the time to differentiate the kinds of germ infection.

I was interested in Dr. Byford's case of tubo-ovarian abscess, in which he made topical applications for two or three months to cure an endometritis before removing the graver cause above. It seems to me the removal of the tubo-ovarian abscess first would have been the quicker way to have accomplished the results.

In conclusion, I believe topical applications, made in a careful manner, with strict attention to asepsis and antisepsis, will give good results. Why not keep the patient under observation for a few days or weeks, get the action of the bowels perfect, have the pelvic organs in good condition, and let the patient enjoy quietude and rest. Then later dilate the cervix, do a superficial or deep curettement, as the case may require, establish drainage, and have done with the case at the end of a couple of weeks. Or, if necessary, pursue this treatment a second time, because if we have to pursue methods to get the same results by long-continued painstaking topical applications, we must wear both the patients and ourselves out, and there are few men who can hold patients to the end by resorting to such a long and tedious treatment. There are some men that can do this. If the time runs into a few months patients will go away displeased and seek other physicians. I have made topical applications in hundreds of cases with good results, and every practitioner endeavors to get the best results in the quickest way. My own conclusions regarding this subject agree with those expressed by Drs. Harris and Weber. I believe the topical applications are too much used, and I prefer curettement in the various forms of endometritis.

Dr. O. B. Will (closing the discussion): I feel that I have nothing of importance to add to the paper I have read. Courtesy demands that I should say a word or two respecting the criticisms

offered. In the first place, I accept with good grace the position taken by Dr. Byford respecting the philosophy of this condition. It is altogether possible that I am wrong in that, yet I consider the position I have taken practically tenable.

In regard to the remarks of Dr. Bacon, I feel, as he has indicated, that it is not wise to put forth some doctrines under the existing circumstances, without extreme caution, as it is well known that many practitioners do not take the precautions that should be taken with respect to topical applications. A few weeks ago I remember being called to a small town outside of Peoria, in consultation, and upon the window sill I saw an applicator charged with cotton used on the last, lying there ready for the next patient.

I am free to admit, also, that my classification may be faulty, but I feel that medicine and surgery at the present time are interdependent, and that in any line of treatment we are obliged to have recourse to both of them. Even upon the very threshold of modern surgery stands medicine, with its anæsthetizing and sterilizing influences.

With respect to the remarks of Dr. Harris, he has said that there is no disagreement this evening with reference to the ultimate value of the living, active cell as a barrier against infection, but I think he misunderstood the drift of my remarks. I intended to convey the idea that one of the objects in the application of the cautery was to invite the larger proportion of that particular element to the part as a barrier against the inroads of septic material. We can all agree I think on that point.

Dr. Samuel L. Weber (closing the discussion): I have very little to say in addition to what I stated in my paper. I think some of the members misunderstood me. I did not intend to imply that all cases of pyosalpinx were caused by topical treatment. A vast number of abortions are criminally produced, and in a large number of these cases septic salpingitis and pyosalpinx follow. We have many cases of infection following labor, and infection of the tubes from intra-uterine operations, from laceration of the cervix, etc. I distinctly stated in my paper that in a large number of cases there was extension of the inflammatory or infective process into the tubes with or without treatment. I still maintain that. From what little I have read on this subject I think the trend of opinion is towards supporting the position I have taken, that a large percentage of cases of salpingitis are due to gonorrhœal infection. A mixed infection is induced by local treatment, with extension of the process to the tubes. In acute gonorrhœa routine applications should not be made. It is hard to draw the line between acute and

chronic gonorrhœa in the female just as it is in the male. Frequently the acute form of the disease does not give many symptoms. In the cases of gonorrhœal infection of the endometrium which come to our office, we do not know whether they are acute or chronic, the symptom complex is so frequently similar in acute, sub-acute and chronic forms. The temptation is to make local applications, and this is yielded to by the vast majority of practitioners. I maintain that a great many of such applications are followed by pyosalpinx.

One more point, how chemicals act locally. I have been lecturing on materia medica for five years, and there is no subject that I have to talk about which gives me so much trouble as the physiological action of the various drugs that are used for local treatment of the endometrium, the urethra, the pharynx and other mucous membranes. It is very easy to stand up before students and practitioners and talk about certain drugs being astringents, alteratives, stimulants, and so forth, but we know very little about them. I think bacteriologic work tends to confirm the fact that all inflammations of mucous membranes anywhere are of bacterial origin, even an acute rhinitis that comes in an hour after an exposure to cold. And I think that these locally-applied drugs except the palliatives ones all act essentially through their antiseptic action, different drugs being valuable at different stages of the inflammation.

Official Transactions.

T. J. WATKINS, *Editor of Society.*

UTERINE FIBROMATA IN PREGNANCY, WITH REPORT OF A CASE.*

By W. H. Rumpf, M.D., Chicago.

In reporting a case of pregnancy complicated by fibroids, I take the opportunity to make a few remarks about this not infrequent condition. The case in brief is as follows:

Mrs. G. A.; aged thirty-five years; married two years; had menstruated regularly and had never been pregnant before. The previous and family history represent no unusual features.

I saw her first at St. Luke's Hospital Dispensary, when she was about three months pregnant. I did not find anything abnormal in the local or general condition. The urine contained no albumen. She did not report to me again until about five months later. The urine then contained about two per cent. albumen and numerous casts. There was some œdema of the lower extremities. I prescribed exclusive milk diet and diuretics and did not hear from her again until I was called to the confinement on December 27.

She had been in labor about two hours. The pains were very severe and almost continuous, the face had an anxious expression, and the patient was very restless and complained of headache. The lower extremities and the vulva were very œdematous. On external examination I was surprised to find the fundus of the uterus covered with subserous fibroids, varying in size from one to four inches in diameter. The majority of the tumors were on the posterior surface of the fundus. The position of the child was a left occipito-vulsion took place. The termination of the labor by forceps now seemed indicated, and was easily accomplished. The child was asphyxiated, and did not rally after half an hour's manipulations according to Schultze and Laborde. The placenta was expressed in twenty minutes and a perineal laceration closed with four silkworm gut sutures. Immediately after this latter operation a third eclamptic attack occurred. The uterus contracted well, and there was no

* Read. For *Discussion*, see page 232.

unusual hæmorrhage. Owing to very unfavorable surroundings, I had the patient transferred to St. Luke's Hospital the same day.

The principal points of interest in the puerperium were the rapid disappearance of the tumors and the cessation of the albuminuria with its accompanying œdemata. Apropos of the latter, I would mention that the patient passed ℥150 of urine during the first twenty-four hours after her entrance into the hospital. At one catheterization 40 ℥ were removed. At the end of two weeks the patient was out of bed and the urine was entirely normal. The fibroids had diminished to one-half their original size. I examined the patient two weeks ago, about four months after the confinement, and found only three or four fibroids of the size of a walnut still remaining in the posterior wall of the uterus. The latter was in good position, the patient was menstruating regularly, and was in excellent health.

In following out the train of thoughts suggested by this case, I will touch only briefly on the eclampsia. The temptation to try to bring it into connection with the presence of the large fibroids is great. The latter undoubtedly caused an unusual enlargement of the uterus, and on account of their location may have been an ætiological factor in the causation of the nephritis and eclampsia by pressure on the ureters.

It is not my intention to enter upon these interesting specula-anterior. The fœtal heart-tones were 140. The os was found to be dilated about the size of a dollar, the bag of waters had ruptured, and the head was engaging well in the pelvis. There was apparently no obstruction to the passage of the child through the parturient canal. I had scarcely finished examination when another complication required my attention. This was a very characteristic attack of eclamptic convulsions. I immediately injected one-fourth grain morphia and made preparations for forceps delivery. In half an hour the head was almost entirely in the pelvis when a second con-

tions any further, and I shall confine my remarks solely to the complications caused by fibroid tumors in pregnancy in general.

The first point of interest that presents itself is the question in how far fibroids predispose to sterility. According to statistics of Güsserow (1), Schroeder (2), Lefour (3), Winckel (4), Pestalozza (5), and Müller (6), it appears that about seventy-five per cent. of patients in general with fibroids are married women, and that of these

from twenty-five to thirty per cent. are sterile. In order to form an unprejudiced opinion in how far the fibroids were the cause of the sterility, it will be necessary to take into account the percentage of sterile marriages in general. The data in this respect are very meagre, and in considering them we must remember that women that have borne children will be more likely to come under the notice of the gynæcologist than those that have not. According to Simpson (7), Wells (8), Sims (9), Duncan (10), and Grünwaldt (11), the percentage of all sterile marriages varies from eight to fifteen per cent. This would give us an increase of sterility in consequence of fibroids of over ten per cent. As reasons for the sterility mechanical obstruction to conception, hæmorrhages and degenerative changes in the appendages are mentioned. Hofmeier (12), who has written by far the most exhaustive treatise on this subject, contends that in many of the cases cited in the various statistics, the sterility has been present for many years before the fibroids were present or at least caused any appreciable disturbance, and that consequently in a great number of cases the original cause of the sterility must be looked for in another direction. That in other words the fibroids were wrongfully accused of being the cause, whereas they were only accidental complications. He argues further that the disposition to the growth of fibroids in the uterus in general is very great, and inasmuch as the majority of women are married, we find the greatest number of myomata among married women. I am inclined to subscribe myself to his assertion that the ætiological importance of fibroids as the cause of sterility has been greatly over-rated.

I come now to the second consideration of importance—the influence of myomata on pregnancy. Here, too, many of the statistics which apparently show the great preponderance of abortions in pregnancies, complicated by fibroids, fail to take into account the percentage of abortions in general. The chances for abortion are of course greatly dependent upon the location of the tumor. Thus interstitial and submucous fibroids predispose more to abortion than subserous growths. The very rapid growth of the tumors in pregnancy, as in my case for instance, is similar to the usual hypertrophy attending the muscular and fibrous elements of the uterus in general, and also upon a serous infiltration and increased vascularity. The lymph-spaces enlarge and frequently form cysts. Thus the tumors occasionally become so soft and flattened out that they

are recognized with difficulty. The degenerative changes which they undergo after pregnancy will be considered later on.

The disturbances caused by myomata during pregnancy are not necessarily very great.

The increased size of the uterus will in many cases give rise to greater pain than in a normal pregnancy, but the inconvenience caused is seldom sufficient indication for operative interference. The induction of premature labor is hardly ever justified. It is a dangerous proceeding, unnecessarily sacrifices the child and leaves the tumors.

The treatment of fibroids during labor should also be governed by the greatest conservatism. In looking quite extensively over the literature on the subject, it appeared to me that very many cases have been reported in which an operative mania has resulted unfortunately for mother and child. Surgical interference is often absolutely necessary, however, and gives rise to many difficult and interesting conditions. Submucous fibroids can often be enucleated during labor. Cervical and subserous myomata behind the uterus, filling up the entire pelvis, may necessitate Cæsarian section.

Another great source of danger from fibroids is their predisposition to postpartum hæmorrhage. Interstitial tumors especially interfere with the symmetrical contractions of the uterus. Great watchfulness for many hours after the confinement and a thorough trial of all milder means from simple massage to tamponade of the uterus, will often obviate the necessity for graver procedures.

I should like to say a few words in conclusion about the fate of myomata in the puerperium. We have to deal here with two possible conditions—first, degeneration, and second, abscess formation through infection. The degeneration may be of a fatty, myxomatous or cystic nature. The latter is the most serious, because it is accompanied by a greater softening and breaking down of the tumor elements, thus offering a better field for infection. In my case there was no softening noticeable, and the degeneration was probably only of the fatty order, analogous to the involution of the uterus. Whether the myomata ever disappear entirely is very doubtful, and the question arises what course to pursue in cases similar to the one I reported. Shall we allow the patient to again encounter the same danger to life in a possible subsequent pregnancy? In my particular case I have felt justified in advising a laparotomy. It will be

possible to enucleate all of the subserous fibroids and to preserve the functions of the uterus. The possibility to operate conservatively, the age of the patient, thirty-five years, and her great desire to have children, justify an early operation.

In conclusion, I should again like to emphasize the following points:

1. Fibroid tumors do not predispose to any great extent to sterility.

2. Fibroids in pregnancy, during labor and in the puerperium represent dangerous complications in only a small number of cases.

3. Too active operative interference should be much guarded against.

4. The operation for the removal of the tumors should not be postponed until some months after confinement.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, May 21, 1897.

The *President*, ADDISON H. FOSTER, M.D., in the Chair.

A New Button for Intestinal Anastomosis.

Dr. JOHN A. LYONS: This instrument I have been laboring over for about one year.

It is a metallic button with two discs, and resembles in principle the Murphy button. The approximating edge of each disc is indented in five different places to the depth of 2.5 millimeters (about 3-32 of an inch), and has no sharp edges or corners that might penetrate the bowel. The serrations are so arranged that the broad elevations of one disc fit neatly into the broad depressions of the other. When the button is ready for use its two halves are permanently fixed together by a spiral spring, which is placed between the male and female central cylinders. The cylinders are, of course, inseparable from the discs.

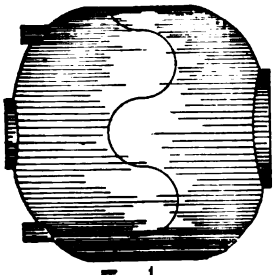

FIG. 1

Perspective view of the Button complete.

From the inner border of the female cylinder three prolongations extend through the male cup which protect the spring and prevent the possibility of tying the puckering string around the spring. The fenestræ through which these prolongations pass will act somewhat as drains of the cup of the button.

Through the cylinders there are a few holes through which may be passed a movable long steel pin or probe, for the double purpose of keeping the discs apart, and of holding the button firmly while the operator ties the bowel in place.

When the pin is withdrawn the button approximates the intestinal walls automatically, and completes its application without undue manipulation or injurious pressure to them.

Another factor I believe to be somewhat important is that the circumferential distance over the serrated edges is much longer

(averaging about one-third) than is the distance over a level edge, so that a larger lumen is obtained at the place of anastomosis with a button with a serrated edge than with a button with a level edge; consequently a smaller button of this pattern may be used.

The claims made for this device may be readily inferred from the above brief description, and are:

1. It is compact, in one piece, and ready for immediate use.

2. The method of its manipulation during application is such as to give a minimum amount of bowel disturbance and injury.

3. The automatic action from the properly-arranged spiral spring removes the necessity of forcibly pressing home the discs, so that all injury from this source is eliminated.

4. The size of the button need never be large, because of the long line of union which results.

5. Imperfect co-aptation of its discs is impossible.

6. It is very easy to apply.

7. There is less liability to bowel obstruction during its passage through the bowel, as the button is always small.

8. The spring pressure is the same at all points, and it is more reliable than rubber.

9. It is durable.

10. After being used, when boiled and made clean, it is ready for use again, no portion of it being displaced.

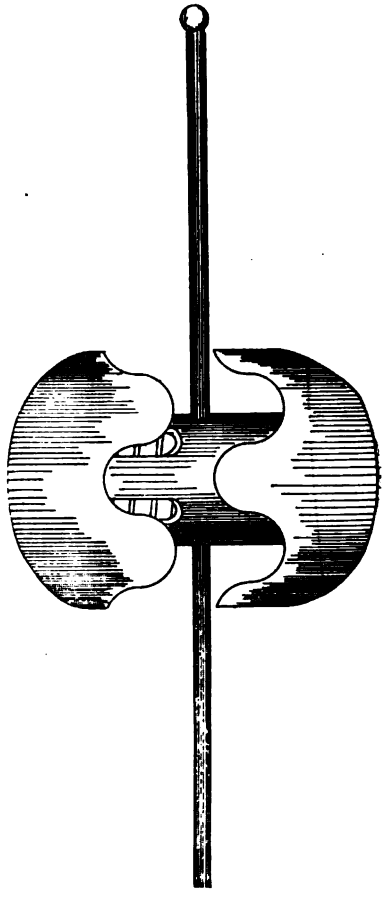

Fig. 2

The Button open with Rod or Probe holding it open until the Intestines are attached to the center cylinder. When the Rod is removed, the Discs approximate the Bowel by its Coil Spring.

11. For this reason it is in the end a very cheap button, as it only requires occasional replating.

The one I show you now has been used in an end-to-end anastomosis, and was passed yesterday after having been in the abdomen four days.

The small dog on which it was used is running around and eating well.

More experiments are being made to determine absolutely and accurately some of the points claimed for the button.

The main object, this evening, is to place my invention on record, but at some future time I shall present a report of my experiments.

DISCUSSION.

Dr. ALEXANDER H. FERGUSON: In bringing forward this new device, Dr. Lyons claims that it is an improvement upon the Murphy button. It certainly does away with one objection which I have found with Murphy's button, and that is in trying to put the two parts of the button together after the puckering stitches were applied, one of the sides caught first and I could not pull it off nor push it together. Dr. Murphy claims that if his button is perfectly made such a thing cannot take place. But the fact that it does occasionally occur is sufficient. The device presented by Dr. Lyons obviates this difficulty; but I do not think there is anything in the claim he makes with reference to getting a better circulation than we would have by the application of Murphy's button. The fact still remains that this and other buttons that have been devised produce gangrene, and there is no use of circumlocuting and using the name of pressure atrophy. A slough takes place, and if this occurs before healing has taken place behind the cutting off of the circulation, then, of course, there is more liability of leakage, so that this spiral spring pressure, regulated as in the Murphy button, would be about even as far as merit is concerned. But the great objection is gangrene, and whether an extension of the gangrene or liquefaction of the plastic material that is thrown out to form union takes place or not will depend a great deal upon the intestinal germs that may be present. There are a number of objections to the suture. If we could get a combination of some device which would do away with the objections of gangrene or the formation of large sloughs it would be a good thing. Of course, the surgeon who is accustomed to sew can sew accurately. I have been working along these lines myself. I

have been sizing up the objections to both the suture and button, and thus far, in my opinion, we have no device that is absolutely faultless or perfect. The device of Dr. Lyons should be thoroughly tested experimentally. I have no doubt there is merit in it and that it will prove of value to surgeons.

Dr. LYONS (closing): I am aware, Mr. President, that "one swallow does not make a summer," nor does one successful application of any device settle its fate. I am, however, grateful for the reception given to it to-night, and it encourages me to still further pursue my work on these lines. That the Murphy button and other devices hitherto produced have serious faults has become apparent to many of our best surgeons. Some of these objections have been pointed out in this Society before now, and this evening by Dr. Ferguson. Yet, I look upon the Murphy button as superior to any other device heretofore invented, and it was with the hope of overcoming, at least, some of its objections that I began this work.

Most of my experiments have been conducted at The Post-Graduate Medical School, assisted by Messrs. Wilson and Emerson.

I am given to understand by the manufacturers that the price of the button will be quite reasonable. They are making for me the same style of button without the indented approximating edges, but I do not think these will prove as satisfactory or as efficient as the indented ones.

Uterine Fibromata in Pregnancy, with Report of a Case.

BY WM. H. RUMPF, M.D., CHICAGO.

(See page 224.)

DISCUSSION.

Dr. C. S. BACON: If the case that has been presented is anything more than an excuse for a consideration of fibroids during labor, I think the consideration of its bearing upon the production of eclampsia should have been more thoroughly discussed. The cause of eclampsia is still involved in so much doubt that anything which will tend to help clear up the subject ought to be made use of. I believe that the trend of opinion at present is that eclampsia is due to an increase in the toxicity of the blood serum, and that the nature of the toxic element may perhaps be something different from

the ordinary toxic element of the blood, or it may be simply the toxic elements in normal blood which are not eliminated by the excretory organs. In any case there is a failure in elimination, either of a foreign toxic element or of the ordinary toxic element. The kidneys and the other excretory organs do not excrete as much as they should. Whether the fibroid tumors, as I believe has been held by some, injure the function or the structure of the kidneys, and how, would be a very interesting subject for a little more discussion than the essayist gives. Is it by the action of the toxines produced by infection of the fibroids, or is it due to the compression of the ureters produced by the tumors?

In the discussion of fibroid tumors and the complications that arise from them, such a broad field has been gone over that I do not know that there are any particular points upon which I care to dilate.

The PRESIDENT: I would like to ask Dr. Bacon whether he has ever encountered very large fibroids during pregnancy?

Dr. BACON: I have had cases of fibroid tumors of considerable size complicating pregnancy, which caused no interference with labor. I have never had any cases which gave rise to any interesting complications in fibroid tumors of the uterus. But I have had cases of considerable size that gave absolutely no disturbance.

Dr. T. J. WATKINS: One point of interest in Dr. Rumpf's paper relative to eclampsia is the large amount of urine secreted immediately after labor. I remember having a case where two weeks prior to labor the woman secreted daily under the influence of diuretics from two to four quarts of urine; the amount of solids excreted was more than normal. She had severe eclampsia during labor, notwithstanding the profuse elimination by the kidneys.

In considering the relation of fibroids to sterility, it might possibly be of some interest to consider the ætiology of these tumors, as the condition that produces the fibroid may be one that will produce sterility. For instance, I believe Dr. Byford has ventured the opinion that fibroids are due to a germ; and Joseph Price also states that in cases of suppurative disease of the appendages fibroids often result. The indications for interference with pregnancy complicated by fibroids have not been well given, and, as the essayist has said, there is undoubtedly too great a tendency to operate during pregnancy. It has been frequently stated that a fibroid should not

be treated surgically during pregnancy, if it is not large and is not located so low down as to mechanically interfere with labor. There are probably many cases where in the early months of pregnancy the tumor is located in the bony canal, and as gestation advances the tumor is elevated out of the bony canal and permits natural labor to take place. I remember particularly one case that I operated upon where a large fibroid of the uterus was located low down in the pelvis, which I felt certain would interfere with labor. But in this case after operation the tumor proved to be located on the posterior wall of the uterus quite near the fundus; the uterus was retroverted by it, pregnancy having taken place anterior to and above it. It is not at all improbable that in this case, with development of the uterus, the tumor would have risen out of the pelvis, and this could probably have been materially assisted by manipulation under an anæsthetic.

Another important point is the influence that fibroid tumors have upon the puerperium. About two years ago Dr. Mann, of Buffalo, read a very exhaustive paper upon this subject, in which he showed that where infection takes place in a fibroid uterus death had almost invariably resulted. About a year ago I operated on a case of uterine fibroid during the puerperium. The operation was done about twelve days after labor. In this case a degeneration had taken place, such as the doctor mentioned. The fibroid was located in the posterior wall of the uterus, and its center had undergone such changes as to result in an abscess which contained about one pint of offensive pus. Strange to say, the appendages and the peritonæum showed no signs of infection; all of the infection was apparently located in the fibroid tumor.

Dr. Emil Ries: It has given me great pleasure to hear Dr. Rumpf express such conservative views on this subject, as the general trend of opinion in regard to the treatment of fibroids during pregnancy is slightly too much to the other side. Still I must say, that after one has seen the awful consequences of the development of a fibroid in the puerperal uterus, eventually terminating in death of the patient, as I have seen in one case, he is very much inclined to favor operative procedures. The decision of the question whether to operate or not will, of course, largely depend upon the seat of the tumor. When the tumors are subserous, pedunculated, or when they are very low down in the cervix and are not very large, it

will not be necessary to operate. But where the tumors are intramural, or where large tumors are situated in the cervix, the question of operation during pregnancy or confinement is to be seriously considered. It is not a long time since operations during pregnancy for fibroid tumors were undertaken, and at first the results were unfavorable, because almost invariably abortion followed the operation. Recently, however, the results have been so favorable, especially as regards the life of the fœtus, that we have been encouraged to operate. Patients have been operated upon where the tumor or tumors extended through the wall of the uterus down to the decidual membrane, the decidual membrane having been laid bare during the operation, and yet pregnancy and labor were successfully terminated.

In the case of the patient mentioned above, death occurred after confinement, in consequence of hæmorrhage. In this case a number of fibroid tumors had developed in the wall of the uterus and, in consequence of these fibroids which had undergone liquefaction, there was imperfect contraction of the uterus. The patient died in spite of all conservative methods of treatment employed, such as massage, hot injections, and packing with iodoform gauze, etc. I wish we had operated in that case. In the next case of a similar kind that comes under my care I shall certainly operate.

In myomatous tumors of the uterus during confinement, a good deal depends upon the efficient or inefficient contraction of the uterus. Insufficient contraction of the uterus prevents delivery of the afterbirth, and consequently an operation for the removal of the afterbirth is resorted to too frequently with insufficient aseptic precautions. I have seen such cases and have operated on one where, after normal spontaneous delivery of the fœtus, the placenta did not come away, and the doctor in the country had finally to remove the placenta. The consequence was high temperature and chills very soon after confinement, with the formation of an enormous abscess in the myoma. The uterus was extirpated without difficulty. The patient recovered, but she was in a dangerous condition of sepsis when operated upon.

A few words as regards eclampsia in its relation to myomas. Some ten years ago, when I wrote my inaugural thesis on eclampsia, I looked up the literature, trying to find cases of tumors of the uterus of any kind that had led to eclamptic convulsions or even to

uræmia. I found no case on record where a uterine fibroid or a tumor impacted in the pelvis had led to uræmia. All of the tumors which do lead to uræmia are of such nature that they spread to the connective tissue and infiltrate it, bringing about compression of the ureters. These tumors are either carcinomas or sarcomas. In cases of intraligamentary myomata or parovarian tumors, compression of the ureter appears more likely to occur than in ovarian tumors. But in none of these cases have eclamptic convulsions been observed. Uræmia frequently follows carcinoma, from compression of the ureters by the growth. In cases of myoma I have not observed eclampsia. In this special case which I saw with Dr. Rumpf, the myomata did not fill the pelvis; they were subserous, and had a degree of mobility which I think excluded the possibility of the eclamptic convulsions being caused by pressure of the tumors on the ureters.

I have examined a number of cases where large tumors formed in the pelvis, and have tried to find abnormal constituents of the urine which might be produced by compression of the ureters. The theory of the production of eclampsia by compression of the ureters is that, in consequence of the stagnation of the urine, the epithelium in the kidneys is injured and allows a certain amount of blood albumen to pass away; in this way albuminuria ensues. If this is correct, compression of the ureters must lead to albuminuria often, if sometimes to eclampsia. But I have not been able to find albuminuria in cases of tumors filling the pelvis. Albuminuria does occur sometimes in malignant tumors in the pelvis, but then we always have the question of possible metastasis in the kidneys, and consequent albuminuria.

The disappearance of fibroids during the puerperium is a fortunate occurrence; nevertheless I should wish to see the patient operated on, if necessary, during pregnancy if the tumors begin to grow. During pregnancy tumors which at first are subserous may become intramural, and may lead to serious consequences during confinement, and may be more difficult to manage if they have grown into the wall of the uterus. If in the case presented here a second pregnancy occurs, and on close observation the tumors appear to grow, I should advise operation during pregnancy for removal of the tumors without extirpation of the uterus.

Dr. JOHN A. LYONS: This excellent paper of Dr. Rumpf calls

to mind a case I had some three years ago. I confined a woman, and a short time after delivery of the child there was a severe hæmorrhage from the uterus, which led me to think that I had left some membranes in the uterus. I entered the uterine cavity and dislodged a submucous fibroid which was near the right horn of the uterus. It was about the size of an ordinary orange. I cleaned out the depression that was left, and the patient made a good recovery. Some six weeks ago another physician delivered the same woman, and she has since had a very serious time. On being called to see her I found her limbs very much swollen, and she is confined to bed. I am inclined to believe that she has another fibroid tumor and that infection has taken place, as occurred in the case reported by Dr. Watkins.

I recall another patient who had a uterine fibroid. The patient became pregnant and, at about three and a half months' gestation, aborted. The wall of the uterus, particularly the anterior wall, in this case was very thin, and a fibroid as large as my hand was situated in the posterior uterine wall. I think the fibroid has reduced in size since then.

Dr. RUMPF (closing): I agree with Dr. Bacon that it would have been interesting to have dwelt upon the question of the possible cause for the eclampsia a little more fully. I did not do this for two reasons: In the first place, I did not wish to branch out too extensively from the subject of my paper and, in the second place, I believe with Dr. Ries that the tumors had nothing to do with the production of the eclampsia. In looking over the literature of this subject, I was able to find only one case similar to the one reported by me. This case I found in Lusk's *Text-book of Obstetrics.* I do not agree with Dr. Ries in advising so strongly the removal of these tumors during pregnancy. The complications which arise from fibroids during pregnancy and their interference with delivery are very slight as compared with the great danger of operation during pregnancy. The hæmorrhage and danger of infection, besides the possibility of abortion, I think outweigh the advantages to be gained by removing these tumors during pregnancy. They can be much more safely enucleated after confinement, even if they do become slightly interstitial after having been subserous.

Official Transactions.

T. J. WATKINS, *Editor of Society.*

EXHIBITION OF UNIQUE MICROSCOPIC SECTIONS OF PAPILLOMA AND CARCINOMA OF THE TUBES, WITH A REVIEW OF CASES TREATED BY ME AT ST. LUKE'S HOSPITAL DURING ONE YEAR.*

By T. J. Watkins, M.D.,

Assistant Professor of Gynæcology, Northwestern University Medical School; Gynæcologist to St. Luke's, Wesley, Lakeside and Provident Hospitals, Chicago.

The object of this report is to give the results of some of the work done in St. Luke's Hospital, to compare the results of different operations, to attempt to formulate some rules for the selection of operations, and to briefly report some interesting cases.

The gynæcological operating-room is not a so-called "modern operating-room," as it has wood floor, painted walls, and inexpensive furnishings.

A graduate nurse and two assistants devote their entire time to preparing for and assisting at operations. They prepare all sutures, ligatures, gauzes, dressings, etc., used in the hospital.

Gauze is invariably used for sponging. Catgut prepared by the dry heat process in a Boeckmann sterilizer, is usually employed for sutures and ligatures in the abdominal cavity, and no bad results can be attributed to it.

The hands of the operator, assistants and nurses are scrubbed for from fifteen to twenty minutes with tincture of green soap and water, then in lysol one per cent. solution, alcohol, bichloride of mercury 1-1000, and finally in sterilized water. The results of this method of preparing the hands have been entirely satisfactory, as no cultures could be obtained from the hands thus prepared after they had been contaminated with pus from offensive pelvic abscesses.

* Read. For *Discussion*, see page 288.

LIST OF OPERATIONS, WITH COMMENTS UPON INTERESTING CASES.

Hystero-Salpingo-Oöphorectomy (Vaginal) for Uterine Carcinoma.

Total, two. Recovered,* two. In both cases the disease was far advanced. In Case I. no urine had passed into the bladder for twenty-four hours after the operation, when the forceps were removed on account of suspected occlusion of the ureters. Active hæmorrhage followed the removal of the forceps, which was stopped by forcipressure; urine then fortunately passed freely into the bladder, and the patient made a rapid recovery. The broad ligaments were clamped a considerable distance from the uterus, because the disease was far advanced. Two months after the operation she was enjoying good health, and no pelvic disease could be detected on vaginal examination. The recovery is, however, probably only temporary. In Case II. the carcinoma involved the fundus of the bladder. A vesico-vaginal fistula resulted, and the disease continued. The improvement was for only a short time. In Case I. vagino-abdominal hysterectomy would have been preferable, with removal of the iliac glands, as first suggested by Dr. Emil Ries, first performed by Dr. Rumpf, of Berlin, and later practiced at Johns Hopkins Hospital. In Case II. a radical operation should not have been attempted.

Hystero-Salpingo-Oöphorectomy (Abdominal) for Uterine Fibroid.

Total, four. Recovered, four. In these cases it probably would have been better surgery to have left the ovaries, as they were perfectly healthy, on account of possible benefit to be derived from the internal secretion of these organs. The method employed was a modification of the Goffe-Baer operation. The uterus in these cases was too large to be removed through the vagina.

Hystero-Salpingo-Oöphorectomy (Abdominal) for Uterine Fibroid with Suppurative Disease.

Total, three. Recovered, three. Case I. was a small fibroid with double tubo-ovarian abscess and extensive adhesions. The

* Recovery is here used to indicate recovery from the operation and not necessarily cure, because the time since the operations were done is too brief to give the permanent result, and the result in many of the cases is not known after the patients leave the hospital.

cervix was not removed; vaginal gauze drainage was used; suppuration occurred in the pedicle, which protracted the recovery. Total extirpation should have been done.

Case II. was a large fibroid with double pyosalpinx.

Case III. was a puerperal fibroid uterus which weighed six and one-half pounds at the time of removal. The tumor was located in the posterior wall of the uterus. The center of the tumor had suppurated, and the abscess contained about one pint of very offensive sero-pus. The walls of the abscess were very ragged, irregular and necrotic. The patient was about five and one-half months pregnant with twins. She miscarried, three days later became septic, and thirteen days later was operated on. Her history in brief is as follows:

Mrs. L. G., twenty-five years of age, married six months, has had dysmenorrhea for one and one-half years, and for some time has had dysuria. She had noticed no enlargement of the abdomen prior to pregnancy, and had considered her pregnancy normal. The morning of August 16, 1896, a large amount of amniotic fluid escaped. She suffered severe labor pains, and sent for Dr. A. W. Bigelow, who then saw her for the first time. He found an umbilical cord presenting at the vulva. The os-uteri was crowded upward and forward behind and to the left of the pubes by a large fibroid tumor. The abdomen was exceedingly large, very painful on pressure, and so tense that it was impossible to outline the tumor or the fœtus.

The first fœtus was expelled about 1 P. M. the next day (August 17), and was somewhat macerated, showing it had been dead for some days. In the evening Dr. Bigelow asked me to assist him to remove the placenta. Under narcosis the hand was introduced into the vagina; the fingers were with difficulty passed between the tumor and the pubes into the uterus, and after considerable effort the placenta was extracted. Following the placenta the second amniotic sac presented and was ruptured. It was impossible to touch the second fœtus, on account of the obstruction caused by the tumor. The vagina was thoroughly irrigated with bichloride of mercury, and the cervix and vagina packed with iodoform gauze.

The second fœtus with its placenta was expelled without aid the next morning (August 18). The pains were very strong during the entire labor. For three days following labor her condition was

good except that the abdomen remained very sensitive to pressure. She then developed a temperature which varied from 100° to 104°, the pulse varying from 90 to 120, from August 21 to August 29, when she was operated on. She was taken to St. Luke's Hospital August 27, 1896, prepared for abdominal section, and operation made two days later. An abdominal incision was made, the tumor removed, the arteries ligated with silk, the wound of the broad ligaments and stump closed by a continuous catgut suture, and the abdominal incision closed without drainage. The uterine cavity, Fallopian tubes and peritonæum showed no evidence of infection. She suffered very little after the operation, and recovered practically without any elevation of temperature or increase in pulse rate. The sutures were removed on the sixteenth day. The wound united without suppuration. She left the hospital in very good condition on the twenty-ninth day after the operation.

Vaginal Hysterectomy for Uterine Fibroid.

Total, two. Recovered, two. The tubes and ovaries were purposely left *in situ.*

Case I. had numerous fibroid growths in the general muscular system. She was hoarse, probably as the result of involvement of the laryngeal muscles. Thyroid extract was used for about two months, but without any relief. Now, about nine months after the operation, the hoarseness has entirely disappeared and the fibroids in the general muscles have much diminished in size. She has none of the neurotic disturbances of the menopause.

In Case II. a hernia was observed about two weeks after operation, for which she was operated on two months later. A vaginal discharge was the only subjective symptom of the hernia. I did not determine the contents of the hernia, as the protruding mass was covered by granulation tissue, and as I did not deem it safe to separate the adhesions. The hernia was treated by uniting the vaginal walls just below the hernia. She also has none of the neurotic disturbances of the menopause.

Hysterectomy (Vaginal) for Metritis Following Salpingo-Oöphorectomy.

Total, two. Recovered, two.

In Case I. the salpingo-oöphorectomy was done during an at-

tack of puerperal fever, for double ovarian abscess. The indications for vaginal hysterectomy were: Profuse muco-purulent uterine discharge, menorrhagia, large soft uterus, and cyst of left broad ligament. A vesico-vaginal fistula followed sloughing after removal of the forceps, which necessitated a second operation. Case II. was a neurasthenic, hysterical patient, addicted to morphine. The indications for operation were a small, tender mass behind the uterus, and some tenderness around one horn of the uterus. In the mass was found imbedded a silk ligature from the previous operation. The improvement following the operation was only temporary.

Curettage, Vaginal Section and Drainage for Retained Placenta, Metritis and General Suppurative Peritonitis.

Total, one. Died, one. Soon after this patient entered the hospital a large amount of offensive placental tissue was removed from the uterus, the cavity of the uterus was irrigated and packed with iodoform gauze. No tumefaction could be detected in the pelvis, and it was thought probable that the retained, infected placenta was the entire cause of her illness. She did not improve, and about eighteen hours later colpotomy was made and about one pint of offensive pus was found in the general peritoneal cavity. Free drainage was established, but she continued to fail and died about twenty-four hours after admission to the hospital.

Ventral Suspension for Retro-Position of the Uterus.

Total, one. Recovered, one.

*Ventral Suspension for Retro-Position of the Uterus with Complications.**

Total, nine. Recovered, nine. The uterus was suspended by a fine silk suture, which was passed on either side through the serous coat of the uterus, so as to include the ovarian ligament, and through the parietal peritonæum, and was then tied. I know of no case where the uterus did not remain in position, and of but one

* The complications were adhesions, adeno-myoma of tubes, salpingitis or ovaritis.

case where unfavorable symptoms followed. The fine silk suture used in this manner would not probably complicate gestation or labor. I have been able to determine the present condition of six of these patients. For about three months one of them experienced some distress on standing erect, which was probably due to too high suspension of the uterus. In one of them both tubes were excised on account of nodular growths and adhesions; both ovaries were left. Menstruation has been regular but profuse since the operation. One of these patients became pregnant, and aborted at the end of the second month, probably from endometritis. None of them have had any vesical symptoms, and in all of them the uterus has about the normal amount of mobility.

Vaginal Fixation for Retro-Position of the Uterus.

Total, two. Recovered, two. In one of these patients the uterus is now slightly displaced backward. The patient is wearing a pessary and feels well. She could not wear a pessary prior to the operation without pain. The fixation was done through a transverse incision of the anterior vaginal wall near the cervix. The incision was closed and fixation made by sutures inserted parallel to the line of incision, as suggested and practiced by Dr. Byford. Of late I have modified the technique, and now separate the cervix and vagina, as in hysterectomy. If the cervix is much displaced forward, the upper part of the posterior vaginal wall is incised longitudinally. By this procedure the cervix can be easily fixed upward and backward, which is the most important factor in restoring the uterus to its normal positoin. It obviates the necessity of suturing the body of the uterus to the vaginal wall so near the vaginal outlet, and thus must greatly diminish or avoid the danger of complications to gestation and labor, which have frequently occurred in cases following vaginal fixation.

Curettage for Retained Placental Tissue with Infection.

Total, three. Recovered, three.

*Curettage for Endometritis.**

Total, six. Recovered, six.

*All the infectious cases operated upon were, as a rule, curetted as part of the operation.

Salpingo-Oöphorectomy (Single Abdominal) for Pyosalpinx.

Total, five. Recovered, five. One of these patients was a number of years past the menopause; the uterus had atrophied so that it was only about one and one-half inches long. In another patient who had an abscess of the right tube, there was congenital absence of the left tube and ovary. In the left horn of the uterus there was a small nodule, probably an adeno-myoma, which was excised. This patient, however, continues to menstruate, but at somewhat irregular intervals. I know the present condition of these five cases, and in none of them has the other appendage become affected, and each of them had a well-defined abscess of the tube. Three of them dated from puerperal infection.

*Salpingo-Oöphorectomy (Double Abdominal) for Pyosalpinx.**

Total, thirteen. Recovered, thirteen. I have succeeded in following up the history of nine of these patients. One of them, a very nervous woman, has suffered much from neurosis, probably due to the menopause. Another developed a severe vulvitis and vaginitis (probably gonorrhœal) soon after leaving the hospital, and has suffered much since then from leucorrhœa and vulvar and vaginal irritation. Seven of them have suffered slightly or not at all from the neurosis of the menopause. None of the nine have had any menstrual discharge. In the nine patients observed, the occurrence of the menopause causes some mental distress. In like cases I would now explore the appendages through a vaginal incision, and in the cases where it seemed impossible to preserve the functions of either reproduction or menstruation, I would do a vaginal hystero-salpingo-oöphorectomy. The abdominal operation was selected in most of these cases, with the hope of preserving one or both of these functions.

Hystero-Salpingo-Oöphorectomy (Abdominal) for Pyosalpinx and Metritis.

Total, one. Recovered, one. This patient had had vaginal section and drainage of a puerperal abscess of the right appendage.

* Most of these cases had suppurating, cystic or badly inflamed and adherent ovaries; but in many it would have been possible, and probably advisable, to have left an ovary or some ovarian tissue, so as to have avoided the production of the artificial menopause and possibly of sterility.

Suppuration occurred later in the other appendage, which necessitated abdominal section. The uterus was removed for metritis and adhesions. A vaginal hysterectomy would have been done had I known that suppuration existed in both ovaries.

Hystero-Salpingo-Oöphorectomy (Vaginal) for Pyosalpinx and Metritis.

Total, five. Recovered five. One of these patients had a pelvic abscess which filled the pelvis, extended down between the vagina and rectum, and extended above and to the left of the umbilicus. A vaginal section was made, through which the pus in the pelvis escaped; an abdominal incision had to be made in order to evacuate the abscess that extended into the abdomen. Thorough drainage was established. About two months later the radical operation was made. The uterus and appendages were one mass of friable necrotic tissue. After separation of the right broad ligament and the base of the left one, the remainder of the left broad ligament tore through and occasioned considerable hæmorrhage. The bleeding could not be stopped by forcipressure on account of the necrotic condition of the tissue. The pelvis was packed snugly with gauze to check bleeding. About two hours later it was necessary to remove the packing on account of hæmorrhage, and to repack with gauze saturated with Monsel's solution. She made a slow but good recovery.

One of the patients had suffered for years with a pelvic abscess which repeatedly discharged through the rectum. She had spent about six months of each year in bed. She had been repeatedly refused operation on account of her bad local state and poor general condition. A portion of one ovary was left. She has had regular monthly discharges of blood from the rectum. The rectum is free of hæmorrhoids. She complains somewhat of "hot flashes."

Two of them were near the menopause. Four of them are enjoying comparatively good health; the other one I have not heard from since she left the hospital.

Salpingo-Oöphorectomy (Abdominal) for Tubal Pregnancy.

Total, five. Recovered, five. One patient was operated on during active primary hæmorrhage. One of the operations was secon-

dary to vaginal incision and drainage. The vaginal incision was not the operation of selection, because the patient gave symptoms which indicated recent and recurring hæmorrhages; but she refused abdominal section. Two weeks after the vaginal operation was made she had a hæmorrhage and the tube was then removed by abdominal section.

In the case operated on during active hæmorrhage I believe the pregnant tube could have been removed with more rapidity and with less danger through a vaginal incision, and the recovery of the patient would probably have been more rapid and less painful. One of the patients had a large hæmatocele, which was first opened by vaginal incision; a large mass was found at the top of the hæmatocele, which necessitated the abdominal section. Two of the cases were not diagnosed as tubal pregnancy until after the abdominal section was made.

Hystero-Salpingo-Oöphorectomy (Abdominal) for Tubal Pregnancy, Pyosalpinx and Metritis.

Total, one. Recovered, one. In this case the other appendage was the seat of a suppurating disease and the uterus was large, soft, and badly adherent.

Salpingo-Oöphorectomy (Vaginal) for Tubal Pregnancy.

Total, two. Recovered, two. One of these operations was for an incomplete tubo-abdominal abortion. In both cases the pregnant tube was readily delivered and removed through a posterior cervical incision. One of these patients is now about six months pregnant. The pedicle in the two cases was clamped with a forceps, which was removed twenty-four hours later. The recoveries were much more rapid and less painful than would have followed an abdominal operation.

Salpingo-Oöphorectomy (Double Abdominal), for Benign, Primary Papilloma of the Tubes.

Total, one. Recovered, one. This case is of especial interest because only six other cases of primary papilloma of the tubes appear in the literature. The history in brief, is as follows: Mrs. C., aged thirty-four, was always well and strong until 1893, when she had a miscarriage, which was followed by a severe attack of puerperal fever. She became quite well again, and one year later

received a violent injury to the left inguinal region. This was followed by severe pain and fever, and she was admitted to St. Luke's Hospital about two weeks later (June, 1894). Examination revealed a large fluctuating mass posterior and to the left of the uterus. The abscess was incised and drained through the vagina. The abscess contained about one pint of non-offensive thick pus. In November, 1894, she reëntered the hospital. Examination revealed a tumor to the left and posterior to the uterus, but higher in the pelvis than was the former one. This was opened through the old sinus and about one pint of pus mixed with colloid substance was removed. Drainage tubes were then worn for eight months. In August, 1895, the sinus was dilated and curetted and drainage tubes were worn again for two months. In January, 1896, the appendages were excised on account of persistent discharge of pus; otherwise she felt perfectly well. She made an uneventful recovery from the abdominal section and a recent examination showed the uterus somewhat atrophied, freely movable and free from disease. She feels perfectly well save for occasional "hot flashes."

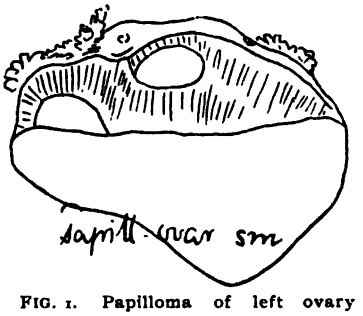

FIG. 1. Papilloma of left ovary (Case 1). Piece of ovary removed to show cysts in ovary.

Dr. Emil Ries kindly made a very thorough examination of the specimens and the following is his report:

"*Macroscopical.* Left appendage—Ovary not enlarged. On its surface in many places are found pedunculated and nonpedunculated wart-like growths. The tube is normal externally except for slight thickening of its isthmic portion. Cross-section through the tube shows nothing abnormal. The ovary contains on sections small cysts, most of which have smooth walls; some of them, however, contain papillary growths. (Figure 1.)

"Right appendage—Ovary of normal size. The tube is six cm. long; the fimbriæ are not visible; the abdominal end is dilated; the uterine end is normal in size; a few papillary growths are on the surface of the ovary and tube. The ovary contains a small abscess, in

NOTE.—These cuts are used through the courtesy of the Journal of the American Medical Association.—EDITOR.

which are found papillary growths. The abdominal ostium of the tube communicates with the cavity of the ovary. The outer half of the tubal canal is studded with papillomatous growths. (Figure 2.)

"Both ovaries and tubes are covered with many adhesions, which are free from papillomata.

"*Microscopic.* The papillomata of the ovaries and tubes are alike in structure, and consist of one layer of long, slender, columnar epithelium over a connective tissue framework, which arises from the mucous membrane and branches out into more and more delicate ramifications. The papillomata contain small calcareous concretions which are usually found in such growths. The wall of the tube over the papillomata shows small areas of round cell-infiltration. Near the mucous membrane are a few cyst-like epithelial formations, which are even found outside the circular muscular layer. The cysts do not contain papillary nor solid epithelial growths. I did not find any endothelial lining to the cysts. The little cysts of the left ovary (which do not contain papillomata) are lined with a simple low cuboidal epithelium and look like simple hydrophic follicles. No corpus luteum cysts are found. The little cysts which contain papillomata are of different structure. They are invested with columnar epithelium which is in direct continuity with the epithelium of the papillomata in the cysts. In several places the cysts communicate with the surface by a narrow cleft lined with epithelium like the epithelium of the papillomata.

"The fact that the growth is more extensive and prominent on the surface of the ovary than in it indicates that it did not originate in the ovary, but developed into it from the tube. The apparent slow growth in the ovaries and absence of ascites also favors the opinion that the growth was primarily tubal. Adeno-myomata were also found in the tubes."

Hystero-Salpingo-Oöphorectomy (Abdominal) for Primary Carcinoma of Both Fallopian Tubes, Myo-Fibroma of the Uterus, and Adeno-Myoma of the tubes.

Total, one. Recovered, one.* This case is of especial interest, as only nineteen other cases of primary carcinoma of the tubes are found in the literature .

* This patient died about six months after leaving the hospital from recurrence of the carcinoma.

Mrs. T. M., Bohemian, aged forty-five years, always enjoyed good health until about two weeks before admission to the hospital, August 29, 1896. She had had one child twenty-three years ago. No miscarriages. Her only symptoms were pain in the pelvis and difficult urination. No family history of malignant disease could be obtained. Menstruation had been regular and normal in amount, but painful. The temperature from time of admission to the hospital until time of operation varied from 99° to 103°; pulse

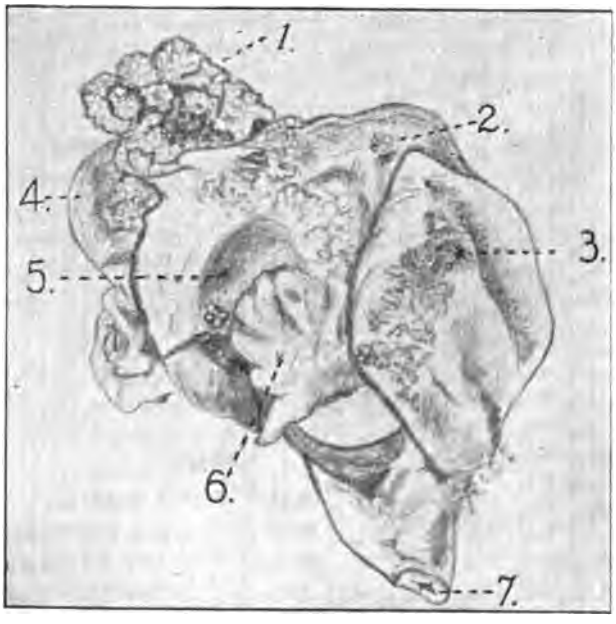

FIG. 2. Papilloma of right tube and ovary (Case 1). Tube and ovary cut open. 1, papilloma on surface of ovary; 2, papilloma in cavity of tube; 3, papilloma on surface of tube; 4, ovary; 5, abscess cavity in ovary; 6, abscess-membrane; 7, uterine end.

90 to 108. Vaginal examination revealed a fibro-myoma of the uterus, with large fluctuating masses posterior and to each side of the uterus. The operation was somewhat difficult on account of numerous and firm adhesions.

The following is a report of specimen by Dr. E. Ries: "Uterus 88 mm. long, cervix 12 mm. long, wall of fundus 10 mm. thick. Posterior wall contains a fibroid with well-marked capsule. Posterior wall 88 mm. thick, 16 mm. being the thickness of the uterine

muscular tissue. In each uterine horn is found by a nodule (N. Figure 3), which has a 15 mm. antero-posterior diameter on the left and a 17 mm. diameter on the right side. The right nodule has three small cavities filled with colloid material. Other nodules are found on the uterus. The right tube, measured along the upper border, is 260 mm. long; its largest circumference is 180 mm. The tube near the nodule at the uterine horn becomes narrower, then it enlarges and forms four large convolutions. The anterior surface of the tube, save for adhesions, is smooth; on the posterior surface are bulky papillomatous growths. The ovary, which contains several corporalutæ and follicles, has no papillary growths. The cavity of the tube (R. T. Figure 3) contains flat and prominent papillomatous masses, which fill the narrow isthmic part completely, but cause only a thickening of the wall of the abdominal end. The tube is so tortuous that on cross-sections of the isthmic portion the canal appears double. The wall of the abdominal end is 1 to 3 mm. thick; the wall of the isthmic portion is double the thickness. Near the broad ligament the tubal wall of the isthmic portion forms a white mass 5 mm. thick, and is covered externally by a stratum of papillomatous masses about 4 mm. thick. Several thick masses of adhesions connect the abdominal portion of the tube with a tumor mass (40 by 40 by 5 mm.). (R. M. Figure 3). On cross-section the mass consists of a white substance, which contains a central cavity. In the cavity are several wart-like excresences.

"The left tube, measured along its external border, is 315 mm. long, the largest circumference (165 mm.) being at the abdominal end. Distinct furrows divide the tube outwardly into four convolutions. Near the first furrow, counting from the uterus, the anterior surface of the tube presents a tortuous elevation (L. M. Figure 3), about 30 mm. long and 1 to 2 mm. thick, a cross-section of which contains a white mass. The anterior and posterior surfaces of the tube are covered with pseudo-membranes. The ovary of this side (L. O. Figure 3) has an ovarian ligament 22 mm. long. The ovary (54 by 20 by 18 mm.) contains numerous corpora candicantia and follicles. Cross-sections through the nodules on the isthmic part present a thick wall and a cleft-like cavity. Further on the wall of the tube is a pretty homogenous white mass. It is stained brownish near the cavity. The cavity itself is filled with a blood clot which reaches from the isthmus to the abdominal end. If the

FIG. 3. Specimen of double papillo-carcinoma of the tubes (Case 2). Anterior view. Uterus cut open through anterior wall. Right tube held open by glass rod, G. Incision in abdominal part of left tube. F, fibroid; C C, uterine cavity; E, elevation of uterine mucosa; UA, anterior wall of uterus; N N, nodule on uterine horn of each side; RRL, right round ligament; RT, right tube; RM, metastatic tumor in adhesion-membranes on right side; LO, left ovary; LM, tortuous elevation (carcinomatous lymphatics, see text).

blood clot is lifted away from the wall, low papillomatous masses are seen everywhere. The wall of the abdominal portion is 2 mm thick; near the uterus the wall is 5 to 7 mm. thick.

"The abdominal ends of both tubes are closed. The right tube contained sero-purulent fluid which escaped during the operation, as the tube burst.

"*Microscopical Description.* Right tube.—The wall of the tube does not show any remarkable changes with the exception of some round-cell infiltration along papillary vessels. The mucous membrane presents a multitude of smaller and larger papillary elevations. The elevations consist in the largest part of epithelial masses, while the connective tissue skeleton of the papillæ is scarce, and frequently so crowded with round cells that very few connective tissue cells are visible. The epithelial masses form labyrinthian coils winding in and out, often so close together that no connective tissue whatever remains between them. The epithelium is arranged in single or multiple layers, mostly in the latter. The individual cells are columnar epithelial cells, some very long and thin, some shorter, almost cuboidal. The larger papillæ contain blood vessels. Small hæmorrhagic areas occur in many of the papillæ. The surface is covered with many detached and degenerated cells and cell detritis.

"The arrangement of the epithelial cells is not always distinctly papillary. In many places sections contain apparently glandular or cystic formations, which, however, are only produced by the knife cutting away recesses between papillæ. The epithelium does not grow downward into the wall of this tube.

"The peritonæal coat of this tube shows no pathologic changes in the macroscopically normal portion of the serosa.

"Left tube.—The mucous membrane of the narrower part presents the same appearance as the right tube; the papillary growths and the inextricable coils of epithelial formations exist here in the same manner as on the right side. The cavity contains considerable detritus, consisting of white blood corpuscles, detached and degenerated epithelial cells, and more or less distinct red blood corpuscles. The epithelium does not penetrate the mucous membrane in this part of the tube. The muscular coat contains a few areas of round-cell infiltration of no large extent. In the place mentioned in the macroscopic description, where the tortuous elevation resembling a dilated vessel is seen on the tube, the peritonæal surface

presents a very striking appearance. (See Figure 4.) Between the external muscular layer and the surface there is an accumulation of solid epithelial masses, divided by smaller or larger strings of connective tissue which form a network, the meshes of which are filled by the tumor cells. The tumor cells are many-shaped,

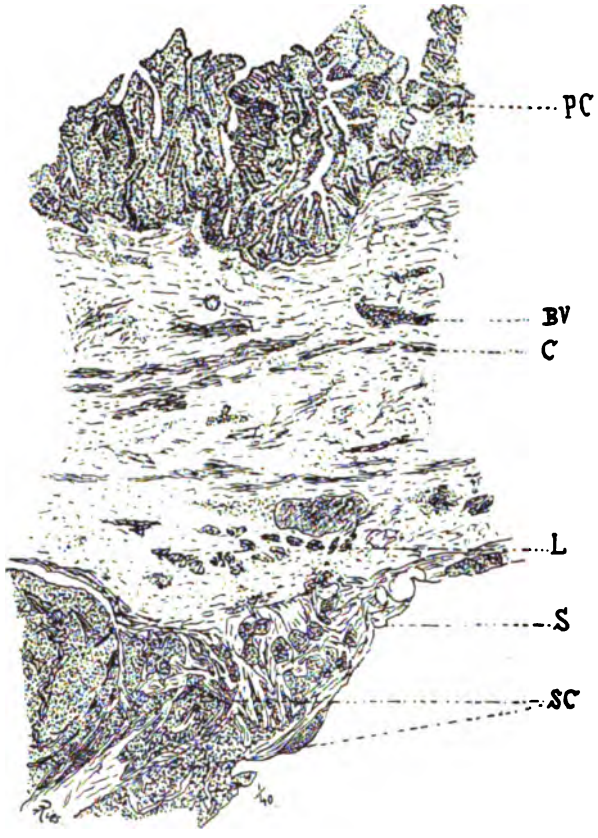

FIG. 4.. Microscopic section of L M, Fig. 3 (Case 2). PC, primary carcinoma of tubal mucosa, the wall of the tube with C circular and L longitudinal muscular layers, and BV blood vessels. S, serous coat of tube with SC solid carcinomatous masses in it.

mostly roundish with large nuclei (some presenting unmistakable karyokinetic figures); others are very large cells with one large nucleus, while still others are real giant cells. The epithelial cells form rounded masses, or appear as rosary-shaped strings with more or less pronounced constrictions. The large epithelial masses are

in some places arranged in strings along and around capillaries which have preserved their endothelium. The latter is seen as a single line of flattened cells dividing the blood corpuscles from the tumor cells. In other places the endothelial lining has disappeared, so that the blood-space, as it is to be called then, is limited by the tumor cells themselves. Smaller epithelial masses, sometimes containing one or several vacuoles, do not contain blood vessels. They are separated from the surrounding connective tissue by a line of flat endothelial cells; in other places this endothelium is rather cuboidal, or even gives rise to small epithelioid buds. Taking all this together, I conclude that these tumor masses are located in lymph spaces, especially those sheathing blood vessels. The importance of this observation with regard to the dissemination of carcinoma by the lymph and blood currents is evident.

"A section of this left tube, comprising the insertion of the isthmic part on the broad ligament, shows the papillo-carcinomatous condition of the tube very much like the right tube; hæmorrhages, however, being more numerous and covering larger areas than in the other tube. The explanation of these hæmorrhages may be found in an obstruction of the venous current, indicated in the sections by the many vessels choked with red blood corpuscles. The peritonæal surface shows some solid carcinomatous nodules resembling those described above, but on a smaller scale. The parovarian tubules in the broad ligament are very distinct. They are without any pathologic change. The wall of this part of the tube contains carcinomatous nests in several places. These nests show the path which the carcinoma has followed from the mucosa to the serosa. The nests are either solid or they have still preserved the papillomatous or coiled arrangement peculiar to the primary growth of the mucosa. Some of these nests are distinctly located in lymph vessels, as is demonstrated by the layer of endothelial cells which is still visible in some places, while in other places there is no such lining of the carcinomatous nests, which are imbedded in the tissue itself.

"*The nodular enlargements* of the isthmic part of the right and left tubes present an extremely interesting combination of neoplasms (see Figure 5), which is described here for the first time, and has not been mentioned in any other case of carcinoma of the tube. The enlargement of the tube here is not caused by a dilatation of the

tubal cavity, but by a thickening of the tubal wall. This thickened portion contains a normal tubal cavity, a slit of stellated or more or less straight shape, with the cuboidal or low columnar epithelium normally found in this part of the tube. Around the mucous membrane there is normal circular muscular layer. Between the

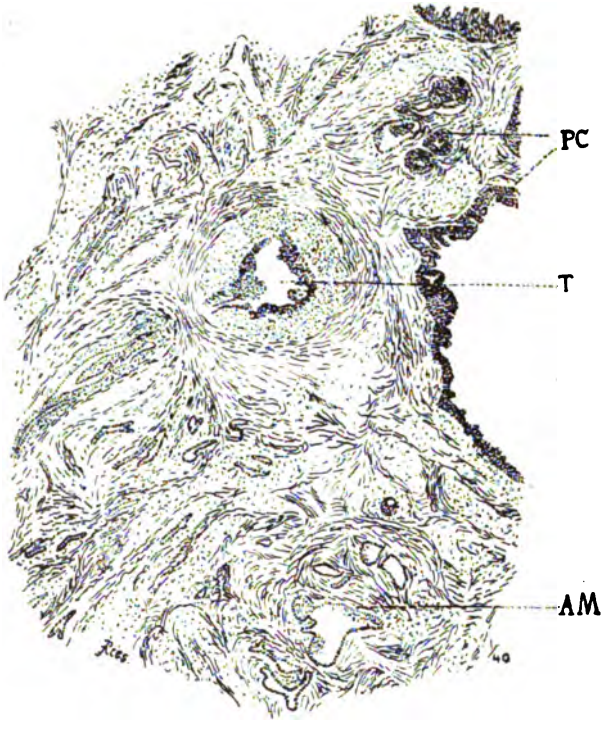

FIG. 5. Microscopic appearance of nodule N of left side, Fig. 3 (Case 2). Section of uterine horn of left side showing tubal cavity T, with its circular muscular layer, the adenomyoma AM, with its muscular tissue, and the carcinomatous masses PC, with papillæ and cyst-like formations.

latter and the serous surface the cause of the thickening is found. The wall of the tube contains: First, the elements of an adenomyoma, and secondly, papillo-carcinomatous masses. The adenomyoma presents the usual appearance as first described by Von Recklinghausen.* There are epithelial tubes, straight or curved or ramified, surrounded by more or less cytogenic tissue and a well-

* Von Recklinghausen: Adeno-myome der Uterus und Tubenwandung 1893.

pronounced muscular coat. I need not further dwell on this adeno-myoma as I have discussed it fully in a paper on Nodular Forms of Tubal Disease.* I must add that in each of these nodules a process of the mucous membrane of the tube was seen penetrating the circular muscular coat of the tube, so that here, as well as in the cases described in my paper mentioned above, it was hard to decide whether the epithelium of the adeno-myoma had originated in Mueller's or in Wolff's duct. Beside this adeno-myoma, the thickened wall contained beautiful papillo-carcinomatous growths, which in some places were simply papillomatous, while in others they were more or less solid nests. In several instances the little cavities which contained the neoplasm were partly lined with a single layer of low columnar epithelium, while the rest was lined with multiple epithelial layers, or was the seat of papillary growths. This leads me to the conclusion that some at least of the carcinomatous nests developed in cavities primarily belonging to the adeno-myoma, supplanting or as it has been called, 'infecting,' the original epithelium. Under the serous coat there are numerous solid carcinomatous nests filling lymphatics. Some of these nests are so large that they form carcinomatous nodules visible with the naked eye. The small cavities mentioned in the macroscopic description are partly simple cysts of adeno-myoma partly filled with papillomatous masses.

"Uterus.—On the left side I followed up the extension of the neoplasm into the body of the uterus, and found that solid and papillomatous masses were spread a short distance into the muscular coat of the uterus, but did not penetrate deeply into it. Along the serous coat, however, the neoplasm had spread extensively, so that small subserous fibroids of the posterior wall and fundus of the uterus, as well as the adhesion membranes on the uterus, everywhere contained carcinomatous masses. The fact that the progress of the malignant neoplasm largely took place along the subserous lymphatics is also proven by the observations made on the body of the uterus, the round ligament, the myoma contained in the uterus and on the endometrium. The endometrium presented nothing but a very light glandular hyperplasia. The muscular coat of the uterus (with the exception of the external layers mentioned above)

* Ries: Amer. Jour. of Exper. Med. (To appear in the next issue.)

and the myoma contained absolutely no epithelial formations. The myoma, or rather myofibroma, had a well-pronounced capsule, and had none of the characteristics of an adeno-myoma. The round ligament showed small carcinomatous nodules in and under its serous coat, but its substance was free from epithelial elements.

"The carcinomatous infection of the adhesion membranes around the uterus and its ligaments has produced quite bulky tumors, especially on the right side of the broad ligament, where the tumor which is mentioned in the macroscopic description (R. M. Figure 3), and which has almost attained the size of an ovary, is purely a carcinomatous growth. The formation of adhesions with

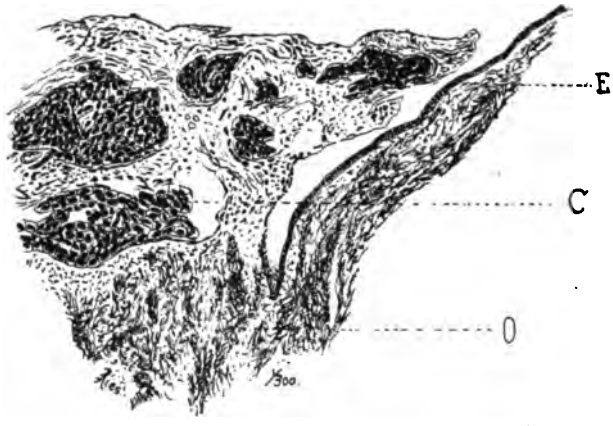

FIG. 6. Microscopic section of ovary (Case 2). E, germinative epithelium of ovary interrupted where carcinomatous masses C adhere to the surface of the ovary. The substance of the ovary, O, is normal.

the *ovaries* has also given rise to the growth of metastatic carcinoma on the ovaries (Figure 6). The substance of the ovaries is without a trace of carcinoma, but the surface of the ovaries is studded with carcinomatous nodules. Their metastic nature is proven by the fact that in many instances the carcinomatous nodule and the ovarian substance are separated by a well-preserved line of germinative epithelium, which is interrupted at the places where the adhesion membrane has grown to the ovary. The carcinoma is arranged in the same way as in the subserous nodules on the surface of the tubes and uterus; that is to say, in solid strings of cells following the lymphatics. Where we see a tumor originating in the germinative epithelium of the ovary the structure of the tumor is entirely differ-

ent, the epithelial neoplasm developing on the surface primarily and essentially in marked contrast to the condition prevailing in this case."

Incision and Drainage, and Salpingectomy for Pyosalpinx and Appendicitis.

Total, one. Died, one. The incision was made above and parallel to Poupart's ligament on the right side. The right tube was removed. The appendiceal abscess was drained. The patient did well for about thirty-six hours, when the pulse became weak and rapid, and she died about twelve hours later. Temperature was about normal until near time of death. Post-mortem examination showed no cause of death, at the site of operation. The fatal termination was probably due to a cardiac embolism. The heart, however, was not examined, as only a partial autopsy was allowed. The pyosalpinx was not diagnosed prior to operation.

Oöphorectomy (Abdominal) for Ovarian Cyst.

Total, eleven. Recovered, eleven. One patient was about three months pregnant, but the pregnancy was not interrupted. In one case, a girl eighteen years of age, the cyst was quite generally attached by friable adhesions to the pelvic peritonæum, broad ligament, uterus, intestines and omentum. Separation of the adhesions was accompanied by terrific hæmorrhage, which could be controlled only by rapid application, by touch, of a large number of forceps. An attempt was made to stop the bleeding with ligatures and sutures, but it was found necessary to leave six forceps on bleeding points on the floor of the pelvis, and to insert a large gauze drain. One of the cases was a large gangrenous dermoid cyst with twisted pedicle, which so simulated appendicitis that an incision was first made over the region of the appendix. Only one ovary had to be removed in any of these cases. The cysts were all too large to be removed by vaginal section.

Oöphorectomy (Vaginal) for Ovarian Cyst.

Total, three. Recovered, three. The cysts were about the size of a small orange, and were easily delivered through a T-shaped in-

cision of the posterior vaginal wall. The recoveries were relatively painless and rapid.

Hystero-Salpingo-Oöphorectomy (Vaginal) for Double Suppurating Ovarian Cyst.

Total, one. Died, one. Before operation this case was supposed to be one of suppurative disease of both appendages, with extensive inflammatory exudate. Both ovaries were imbedded in exudate, as were also the uterus and tubes. After the operation was completed, it seemed that the patient's chances for recovery were much better than they would have been had an abdominal section been performed. Her condition was good for four or five days following the operation, save for elevation of temperature and increase in pulse rate. On the fifth day the wound, which had healed firmly, was reopened and showed that there was no accumulation of pus, serum or blood in the pelvis. There were no symptoms of peritonitis. On the seventh day the patient died, presumably from infection carried through the lymphatics. An autopsy could not be obtained.

Salpingo-Oöphorectomy (Abdominal) for Double Ovarian Abscess.

Total, one. Recovered, one. The cause of the suppuration was infection from an induced abortion. The patient for two days prior to the operation had a temperature varying from 103° to 105°.

Vaginal Section and Drainage for Ovarian Abscess (Puerperal).

Total, one. Recovered, one. In this case an abdominal hystero-salpingo-oöphorectomy had to be done later.

Vaginal Section and Drainage for Pelvic Abscess.

Total, eleven. Recovered, eleven. In one of these cases a vaginal hystero-salpingo-oöphorectomy was done later. The other ten patients have not to my knowledge had any recurrence of pelvic inflammation. Some of the patients were in such a desperate condition that they would probably have died had they been treated by a radical operation. The recoveries are, I believe, more perfect than would have followed a radical operation, and no organs were sacrificed.

In two or three other cases, after abscesses were incised through the vagina, conditions were found indicating radical operation, which was immediately done.

Acute Pelvic Peritonitis. Two cases of acute pelvic peritonitis were treated without operation. One case was due to acute gonorrhœal infection. Both recovered without any apparent involvement of the uterine appendages.

Abdominal Section and Drainage for Pelvic Exudate (Puerperal.)

Total, one. Recovered, one. The exudate involved principally the right horn and appendage of the uterus, but also extended to the bladder, omentum and intestines. The exudate was so resistant to pressure that it was impossible to separate the adhesions without doing great damage to these organs. With the finger, holes were bored into the exudate and abdominal drainage established. I have recently examined this patient, and the pelvic organs seem to be free from disease.

Vaginal Section and Drainage for Exudate in Broad Ligament (Puerperal).

Total, one. Recovered, one.

Abdominal Section for Tubercular Peritonitis with Suppurative Disease of Uterine Appendages.

Total, two. Recovered, two. These two patients had very extensive tubercular peritonitis without ascites. Both recovered sufficiently to leave the hospital, but the improvement could only be temporary. In both a fæcal fistula followed.

Hystero-Salpingo-Oöphorectomy (Abdominal) for Tubercular Salpingitis.

Total, one. Recovered, one.

Ventral Hernia.

Total, three. Recovered, three. In one of these cases the abdominal cavity was not opened. The fascia was exposed by incising the sheath of the recti muscles at the inner border. The layers

of the fascia were then closed separately. This method of free incision into the sheaths of the recti muscles makes the operation easy and insures obtaining the true fascia. In one case the fascia was so separated, on account of the long duration of the hernia and of increase in adipose tissue, that it was impossible to bring the edges of the fascia within four inches of each other. In this case the hernial sac was incised along the median line, the sheaths of both recti muscles were opened, and the surfaces of the flaps were then overlapped so that the sutures which were passed through near the edge of the left flap included the fascia on the right side; and the sutures that passed through near the edge of the right flap, included the fascia in the left side. This caused about four inches of peritonœal surface to be in contact with the same amount of wound surface. The peritonœal surface was not abraded. The sutures which joined the edges of the flap to the edges of the fascia on either side were tied over small rolls of gauze. The superficial part of the wound was closed with silkworm gut sutures. This made three tiers of sutures. The wound healed by primary union, and the abdominal wall continues to be strong.

In operations for ventral hernia much time is saved by opening the sheaths of the recti muscles along their inner border as soon as the skin incision is made. As the strength of the wound chiefly depends upon perfect union of the fascia, care should be taken that the fascia is perfectly coapted. This I do by using the modified quill suture described later.

Congenital Absence of Upper Two-Thirds of Vagina.

Total, one. Recovered, one. A mass the size of a chestnut was found where the uterus should be, and masses about half as large were found lateral to this, which were probably rudimentary ovaries. A transverse incision was made in the vault of the vagina. A canal was then made with the finger from this point to the uterus. Transverse incisions were then made across each vaginal wall, so as to allow them to be lengthened. The vaginal walls were now sutured into the rudimentary uterus, and the transverse incisions in the vagina closed by sutures introduced parallel to the lines of incision. This left a vaginal canal 2¾ to 3 inches long. A medium size Sims' vaginal dilator was worn for three weeks. A recent examination shows the vagina to be about normal in dimensions.

Inguinal Ovarian Hernia.

Total, one. Recovered, one.

Vaginal Hernia following Vaginal Hysterectomy.

Total one. Recovered, one.

*Plastic Operations for Lacerations.**

Total, eleven. Recovered, eleven.

Hæmorrhoids.†

Total, one. Recovered, one.

Incision and Drainage for Appendiceal Abscess.

Total, one. Recovered, one.

SUMMARY OF OPERATIONS.

	Total.	Recovered.	Died.
Hysterectomy (abdominal)	12	12	0
Hysterectomy (vaginal)	12	11	1
Hysterorrhaphy	10	10	0
Vaginal fixation	2	2	0
Salpingo-oöphorectomy (abdominal)	36	36	0
Salpingo-oöphorectomy (vaginal)	4	4	0
Other abdominal sections	7	6	1
Other vaginal sections	12	11	1
Miscellaneous operations	26	26	0
	121	118	3

This number does not show the entire number of operations performed because, in order to make the report brief and less uninteresting, cases where two, three or four operations were done at one sitting are tabulated as one operation.

Deaths. One death was unavoidable, as no known method of treatment could have saved the life of the patient suffering from puerperal fever with general suppurative peritonitis. One death

* Under this head are included operations for lacerations of cervix and anterior and posterior vaginal walls, but not the plastic operations for lacerations done at the same time as the abdominal sections.

† A number of patients who were operated on for other conditions also had hæmorrhoids removed.

seemed to be accidental, as on post-mortem examination no conditions were present at the site of operation to account for death. The other death should have been avoided, as the general condition of the patient prior to operation was good, and the local condition was no worse than is found in many cases successfully operated on. An abdominal operation might have resulted in recovery.

Selection of Operations. I believe that the selection of operations may be briefly outlined as follows:

Carcinoma of the Uterus. In cases not too far advanced for radical operation, an abdominal section should invariably be made; but the operation may be completed through the vagina. Experience may prove that the iliac glands should as a rule be removed.

Uterine Fibroids. In cases not complicated by suppurative disease, the fibroids should in suitable cases be enucleated through the vagina. To accomplish this it may be necessary to incise the cervix, or to make a free vaginal section. When it is necessary to remove the uterus, the ovaries should not be removed unless diseased.

Vaginal hysterectomy is preferable to abdominal hysterectomy when the fibroid uterus is not larger than a pregnant uterus at the third or fourth month of gestation.

Suppurative Disease of Uterine Appendages. Thorough curettage of the uterus should usually be done at the beginning of the operation. The subsequent part of the operation should depend largely upon the experience of the operator and upon the environment. It requires less experience to operate through an abdominal incision than through the vagina. There is, however, greater danger of infection in abdominal than in vaginal operations. Abdominal section is preferable:

1. When the disease extends so high that it cannot be easily reached through the vagina.

2. Usually where it is advisable to do plastic operations upon the tubes or ovaries.

3. In patients that have had or have symptoms of appendicitis.

4. In cases complicated by an enlarged retroposed uterus, where it is possible to preserve ovulation or menstruation.

5. In cases where the vagina is small or especially septic.

The vaginal route is preferable when the above conditions are not present:

1. Where both ovaries are so diseased as to require complete excision; that is, when ovulation or menstruation cannot be preserved.

2. Where the uterus is so diseased as to indicate hysterectomy.

3. In patients near or past the menopause.

4 When the pelvis is apparently one mass of exudate, and especially in cases where pus has been discharged through the rectum.

The presence of a fat, protuberant abdominal wall is evidence in favor of a vaginal operation. The vaginal operation is preferable in cases where a diseased tube can be easily delivered through an incision made in front or behind the cervix. When this is done I believe it is better to control hæmorrhage by forceps than to suture or ligate. When in doubt as to choice of operation, an incision should be made through the vagina posterior to the cervix for exploration.

Circumscribed abscesses should be treated by vaginal section and drainage.

My results in cases of thickened and adherent appendages, from separation of adhesions and drainage per vaginam, have, as a rule, been unsatisfactory. The recoveries from vaginal operation were, as a rule, less painful and more rapid than from abdominal operations.

Tubal Pregnancy. Cases of early rupture with formation of large hæmatoceles should be treated by vaginal section and drainage. Cases of advanced pregnancy should be treated by abdominal section. In cases where the tube is small and located upon the floor of the pelvis, it should be removed through an incision made posterior to the cervix. In cases of early rupture, operated on during hæmorhage, the tube can, I believe, be removed with less danger and with less disturbance to the patient through a vaginal than through an abdominal incision.

Small ovarian cysts should usually be removed through a vaginal incision.

REMARKS.

Cystic ovaries, not ovarian cysts, were usually punctured, preferably with the thermo-cautery, and not removed. Prolapsed ovaries found during abdominal section were treated by suturing the utero-ovarian ligament to the posterior surface of the broad liga-

ment, or by suturing the ligament near the uterus to the parietal peritonæum lateral to the incision.*

Prolapsed tubes which were not so diseased as to require removal were treated by suturing the mesentery of the tube to the round ligament. Nodules in the tubes were excised without removal of the tube.† In one case of a nodule (adeno-myoma) in the isthmic portion of the tube, the nodule and the interstitial portion of the tube were excised and the end of the tube was sutured into the opening in the uterus which resulted from the excision of the instertitial portion of the tube. The other appendage was removed for suppurative disease. The patient became pregnant soon after leaving the hospital and miscarried at the end of the second month, presumably on account of endometritis. A recent examination shows absence of pelvic disease.

One patient had an adeno-myoma in the middle portion of the tube which was resected. The calibre of the tube, however, was so small that it was impossible to perfectly coapt the edges of the mucous membrane. In this case it would probably have been better surgery to have amputated the tube at the site of the nodule, and to have made an abdominal ostium by incising the serous and muscular coats, so as to allow the mucous coat to become inverted.

In occlusion of the abdominal ostium in tubes not irreparably diseased, an opening was made by excising the end of the tube, and by incising the serous and muscular coats, so as to cause eversion of the mucous coat. Diseased tubes were removed by dividing the broad ligament close to, and for the whole length of, the tubes; where any disease existed in the interstitial portion of the tube this was also excised. The wound in the broad ligament and in the horn of the uterus was closed with a catgut suture by a continuous glover's stitch. (For description of technique see *Medical News*, July, 1896.)

Vaginal gauze drainage was used whenever the slightest indication appeared. Glass drainage was not used in a single instance. In three or four cases, abdominal gauze drainage was employed. The drains were removed at the end of twenty-four, forty-eight or

* An attempt was made to leave some ovarian tissue, in cases where both tubes had to be removed, and where the uterus was not irreparably diseased, for the purpose of avoiding an artificial menopause.

† See paper by Dr. Emil Ries in Jour. of Exper. Med. of July.

seventy-two hours, according to indications. Irrigation of the peritonæal cavity was not practiced in a single instance.

The abdominal wound was closed by "through and through" silkworm gut sutures. In a few cases the fascia was united by buried silk or silkworm gut sutures, and in a number of cases the fascia was coapted by a modified quill suture inserted as follows: A silkworm gut suture, armed with a needle, is carried through the skin and fascia on the left side, up and back through the fascia on the right side, including about one-half inch of the fascia, then back through the left side parallel to and about one-half inch distant from the entering portion of the suture. The suture was tied over a small roll of gauze to keep it from cutting through the skin. These sutures are inserted at intervals of about one inch, and ensure perfect approximation of the fascia, upon which the strength of the union depends. I much prefer this to the buried suture.

The suggestion of this suture occurred to me from observing a suture which Dr. E. C. Dudley has used. He inserted his sutures so as to draw the fascia of the left side of the wound to the right, and the fascia of the right side of the wound to the left.

The dressings over the wound are not usually disturbed for two weeks or more, when the sutures are removed. I believe suppuration occurred in only two cases in completely-closed abdominal wounds.

Small doses of morphia or codeia were given when necessary to quiet the patient or to obtain needed rest, but were avoided if possible. Hot water was given in small amounts as soon as the patient regained consciousness after the narcosis. Liquid diet was usually commenced on the second day following the operation. Nutritive enemata were used when persistent nausea and vomiting occurred. Plain water enemata were frequently given for thirst. The bowels were, as a rule, moved on the third and each succeeding day. The patients were usually kept in bed two weeks, sat up the third, and commenced to walk the fourth week.

The good results obtained were, I believe, largely due to the excellent work of the nurses in charge of the operating-room.

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MENTAL DISTURBANCES FOLLOWING PLASTIC OPERATIONS, WITH REPORT OF CASES.*

By John A. Lyons, M.D., Chicago.

Mental disturbances following plastic operations are uncommon. Although the mental results are the opposite in these cases to that usually obtained, yet I consider it as much my duty to present them as it would be if they were each a brilliant success.

Had the mental faculties of my patients been disturbed previous to operative procedures, and had recovery followed the treatment, then I should have considered the results obtained common, and would perhaps have ignored them as cases unworthy of a second thought. The contrary, however, being the case, I deem them of sufficient interest to report.

Case I. Mrs. S., aged thirty-four, American; married twice; had two children by first and one by second husband, the last child being two and a half years old. Since the birth of this last child she claimed to have suffered from very severe occipital headache, general debility, constipation, loss of ambition, with a slight or variable appetite followed very frequently by sour gaseous eructations, and especially with severe leucorrhœal discharge, accompanied by dysmenorrhœa during the entire menstrual period. The patient seemed very much above the average in intelligence, of exceedingly good physique, not naturally of a nervous temperament, but she

* Read. For *Discussion*, see page 292.

claimed to have become quite so in the last year or two. The lungs were in perfect condition, and there was no organic lesion of the heart, this organ being normal in size and position, but slightly irritable. The stomach was apparently normal in size, but tender, upon palpation. The liver, spleen, and kidneys seemed also normal in position and size. The urine was normal in amount and constituents. Abdominal and pelvic examination were negative except for an enlarged uterus, evidently subinvoluted and endometric because of an exceedingly large bilateral laceration of the cervix, the os admitting an index finger with but little force, but with considerable pain. An operation was advised, to which both husband and wife consented. The operation consisted in thorough curettage of the uterine canal, and trachelorrhaphy. The uterus was well packed with iodoform gauze, which was removed at the end of forty-eight hours. The silkworm gut sutures which were used in the cervix were removed eight days later, as perfect primary union had taken place. The os being patulous a uterine sound was easily introduced into the canal. For the following five months the patient failed to menstruate, and she was thought to be pregnant, as her abdomen became apparently larger and she complained of morning nausea, with many other symptoms of pregnancy. Following the operation her mental faculties were more or less disturbed; she was unable to oversee her housework, and was frequently noticed about home perfectly oblivious of her surroundings. Her children, whom she formerly loved most dearly, now disturbed her so much that they had to be removed frequently from her presence. This state of affairs continued for about four months, when I was suddenly summoned and found the entire family in a state of extreme grief, with my patient suffering from acute mania, due to the announcement by telegraph of the sudden death of a beloved and only brother, who had died from nephritis, of which he had suffered for years, without informing any member of the family except this sister. Within two months from this date the patient's mind, which had been in an exceedingly critical condition for several days immediately following his death, entirely recovered; not a trace of dementia was left. A peculiar incident, however, occurred about five weeks after the brother's death. She came to my office suffering from pre-menstrual symptoms and fearing abortion. As there was a slight bloody discharge she wished to know the

progress of her child in utero. Upon examination I found the uterus non-pregnant and perfectly normal in size and position, and the pelvic organs were almost perfectly normal. This knowledge caused some temporary grief, but no dementia followed, and the menses appeared shortly after, perfectly normal and painless. The question is in this case, had the trachelorrhaphy anything whatever to do with the mental disturbances; or was the brain affected because of the knowledge held secret by her for a long time of her brother's nephritic condition, with the protracted illness before operation, responsible? And was the amenorrhœa, in the absence of lung, liver, stomach, kidney or other trouble, caused by the operation, from fear or shock? Or was it due to her own suggestion and excessive desire to bear children, in the hope that she might present a male child to her second husband, which desire I know was very strongly developed?

Case II. This was a case operated on for laceration of the perinæum, in which dementia followed repair twenty months ago. The patient was a German woman, aged thirty-one. She had two children, aged twelve and ten years respectively. She had never been examined by a physician, excepting the one who delivered her of both children, and had not been pregnant since the birth ten years previously. Upon examination, a complete perinæal tear was plainly visible, extending up the rectum almost to the vaginal vault, so that she had incontinence of gas and fæces. When informed of her condition, and that an operation was necessary, she and her husband readily consented, and agreed to go to a hospital, a proposition to which she first strenuously objected.

As this was the worst case of perinæal laceration and of the longest standing, I had seen, much less repaired myself, I was very much gratified in obtaining a beautiful result. She obtained perfect control of the sphincter, so that I felt the chances here for a rapid and early convalescence were good. To my surprise and without any known cause, in less than two months her mind was completely unbalanced. Before operation, in so far as her strength would permit, she had been a loving, careful, saving, cleanly housewife. Now, however, she had become morose, gloomy, and exceedingly careless as to anything that happened about her house or with her family. Besides, she seemed to have lost all knowledge as to the value of money, in fact, would undoubtedly pass it by, either at home or

upon the street, as unworthy of notice; whereas, formerly she was looked upon as an exceedingly penurious woman. Sleep was now almost out of the question with her, unless petted or soothed to sleep by her husband. When upon the street she imagined all men she happened to see were following her with evil intent, so that it became necessary to have an escort with her while taking her morning and evening walks. The company of Christians, or indeed, even conversation upon Christianity in any form, was never to her liking. Now, however, she had become a most devout Catholic, attending church daily. During her lucid moments she was apparently conscious of her feeble-minded condition, and accused me upon every opportunity of being responsible for it, often saying that if I had not proposed operation, her mind, at least, would have been right, and she could have managed the other trouble, as she had done for ten years. This state of melancholia or mania continued with her for some five or six months, and as mysteriously disappeared as it had come, and nine months ago I delivered her of a thirteen-pound boy, by actual weight, without even the sign of a perinæal tear, although I had been in almost mortal dread of the whole perinæal body tearing even worse than it had been before by her exceedingly large child. I account for this saving of the perinæum in two ways: First, when operating, after thoroughly removing the cicatricial plugs, I approximated the rectal tissue carefully with catgut sutures, then built the perinæal body up by the flap-splitting method after the manner of Tait, with very strong silkworm gut sutures. Each suture, however, included the integument, which procedure is not advised by Mr. Tait, as more pain is likely to follow. But the sutures introduced as he advises are frequently very difficult to remove, hence, I usually include the skin. The Tait method of perinæorrhaphy does not, in my opinion, give the strong supporting perinæal body obtained by the Emmet, the Martin, the Simon-Hegar, the Alexander, Duket and other operations. Yet, after his method, the perinæum is less likely than they to rupture again at some future parturition. My experience, therefore, would lead me to endorse the statement of Mr. Tait, who claims that lacerations of the perinæum do not easily result during parturition after his operation.

The second and most important reason why this perinæum was not torn I attribute to the fact that, previous to the perinæal stage

of labor, I very emphatically informed the mother that I wished her to control her pains exactly as I commanded. And the result was indeed wonderful, for when I thought she had given sufficient force to each pain to admit of very slow and gradual dilation, the word "hold," as agreed upon, was given and acted with apparent hypnotic effect, for she would then immediately hold the pain and gradually allow it to ease off, resting quietly between them. Had this not have been done, her tendency was to force the pains, so that she might obtain a rapid delivery of her child, thinking that by so doing she would the more quickly get through suffering. I have used this means of delivery in obstetrics in lieu of chloroform of late years in most all cases where I thought the patient susceptible to my will power, and I feel thus far exceedingly well pleased with the results.

In connection with the cases here reported, I have found a perusal of the literature upon mental depressions and insanity exceedingly interesting. The kind of mental disturbances, as well as the causes thereof, are shown to be, as a rule, different in the different sexes, and at the different ages of the same sex.

While the little ones are passing on from childhood to puberty, during the transformation of their sexual organs, it is not uncommon to find boys suffering from mental disorders, usually depressive in character; Rohe says they are languid, docile, and downcast. While girls, at the pubescent period, are more likely to take on paroxysms of hysteria; they become noisy, maniacal, indecent, erotic, and have frequent convulsive seizures. In fact, the so-called "hysterical" element is so frequent in the pubescent insanity of females, that it almost stamps it with this characteristic form of mania.

In adult life the general pareses and insanities of men may be traced to exposure to extreme heat or severe cold, as, for instance, in polar expeditions, etc., also to overheated, poorly-ventilated houses or work-shops, to traumatism and especially alcoholism, with or without excessive sexual indulgence. The chloral, cocaine, morphine or other drug habits are also responsible.

On the other hand, while in female adult life there are some who allow themselves most unfortunately to suffer from these same causes, yet in the majority of women, of both young and middle life, the cause, as a rule, can safely be attributed to malformations, with a lack of or undevelopment of some portion of the sexual organs, these conditions preying upon their minds until demented.

But a large per cent. are due to disturbances of menstruation, especially amenorrhœa, either from chronic diseases, such as phthisis, or subsequent to an attack of typhoid or other acute fever, or possibly in young girls who have been indiscreet, and who fear exposure because of an illegitimate pregnancy. Dysmenorrhœa, with or without menorrhagia, is also very frequently the disturbing cause of acute mania, which later will almost invariably and sometimes completely improve upon the correction of these disturbances.

Many eminent physicians of both state and private institutions for the insane now believe that a large proportion of the cases of so-called hysterics and hystero-epileptics, who enter asylums and become apparently incurably insane, have some organic affection preceding, and possibly the sole cause of the mischief. It may not necessarily be diseases of the pelvis or parturient canal, but lesions of any kind anywhere about the body may cause these disturbances. A nervous tendency may be inherited, predisposing the subject to hysteria upon the slightest provocation, such as a fit of passion, or perhaps "shock" due to the sudden death of a child, a husband, some friend or relative, or a meeting with some accident, as was most horribly illustrated recently, following the death of the noble women at the Paris charity bazaar, many going insane immediately upon learning of the death of their loved ones. Even the receipt of good news suddenly conveyed has frequently caused insanity or even death.

About ten per cent. of all cases of insanity occur in women between puberty and the menopause, and if statistics were more complete, I think this proportion might be divided between the gestational, the puerperal, and the lactational periods, especially proportioned at about 2.50, 2.25, and 1.25 per cent. Many acute attacks of mania I have no doubt might be reported during the gestational period, which are withheld, both by the physician and the patient's friends, out of respect for patient and her offspring, they fearing a public knowledge of the facts.

Within the last three months I delivered a woman who had three very severe attacks during the gestational period; one immediately after impregnation, one when about four and a half months pregnant, and one just before delivery. The last attack cleared up immediately after the child was born, with absolutely no return since.

She is now so happy, clear-minded and strong, that I feel justified in attributing the attacks to her pregnant condition.

The immediate cause of insanity during the gestational period is not thoroughly understood, at least, I have not been able to reason it out to my entire satisfaction. Siebold says there is responsible for it all stages of debility, either induced before parturition by want, intemperance, disorders of nutrition, or where rapid successions of pregnancies and lactation are carried on simultaneously. That is to say, the woman has children so frequently that she may be pregnant several months while nursing her last child. I have seen this happen often, and lactation continued frequently even up to and beyond viability of the fœtus, and now I recall one case of severe melancholia bordering upon insanity from this cause alone. I delivered the woman twice within ten months of two full-term children. Weakness from hæmorrhage, or exhaustion from any disease followed by pregnancy, may cause insanity, especially in exceptionally young or exceedingly old primaparæ.

During the puerperal stage sepsis is the predominating factor. Olshausen has shown by clinical experience beyond the peradventure of a doubt that insanity is caused by pathological conditions of the parturient canal, which favor the absorption of septic material, and he is supported by such noted authorities as Fordyce Barker, John Siebold, Playfair, and Hansen.

During the lactational period, and afterward the acute and chronic conditions which follow as sequelæ, the neglect of these pathological conditions are responsible. Such as recurrent attacks of pelvic peritonitis, gastritis, endocarditis, etc., etc.

A pathological condition, therefore, of the parturient canal, the pelvic or abdominal viscera, due either to trauma during parturition or secondary to any pathological condition, may cause dementia. But repair or cure of these conditions or disease will usually be followed by an early improvement, or possibly complete cure, of the mental disturbances.

For instance, Rohe, Manton and Gillman claim that by castration, especially for the removal of diseased ovaries, many patients supposed to be hopelessly insane have been very much improved and some cured; and the moral sense of the patient is elevated, she becomes tractable, orderly, industrious and cleanly. In support of

this view in Europe are recorded such authorities as Pozzi, Charcot, Hansen, Playfair, Allbut, Babinski, and J. Y. Simpson.

The three cases I have reported have, however, been diametrically opposed to the general principles of this rule, and it would at first sight appear necessary to record their mania as due to operative interference. This has frequently been done by opponents to surgery, and had these cases fallen into other hands before their complete recovery, such a fact would undoubtedly have been believed, and perhaps so reported. For such at first was the belief, to some extent, of the patients and their friends. But when later they returned to perfect health all such ideas were abandoned, and the return to a normal state of health is now fully credited to their operations, while their dementia is attributed to their pathological condition, requiring operation.

I am also inclined to believe that in the first case the exhaustion previous to the operation and directly due to the torn womb, combined with the knowledge of her brother's kidney trouble, was responsible in a great measure, and perhaps entirely so, for her mania. The amenorrhœa was due, I believe, to what psychologists call suggestion.

In the second case there was absolutely nothing, so far as I could determine, but the weakened condition of the general health, followed by the operation, responsible for her mental disturbances. The fact of her having borne no children from the time the laceration took place until immediately after it was repaired, a period of over ten years, must be taken into account, and may class it among the cases of climacteric insanity. However (if you will pardon the digression), it shows clearly that a healthy spermatozon had never during all these years entered the uterine canal because of contamination with fœces or decomposed secretions. For upon the elimination of these foul secretions from the vagina, impregnation almost immediately followed. If this was not the cause of her ten years' sterility then her vitality was so much reduced that she had not a healthy ova to impregnate; or being impregnated, this new formation became emplanted in an endometrium devoid of nourishment.

As to the treatment of these cases for the dementia, no special line was followed. If a tonic seemed to be indicated, it was given. If a sedative, such was given. And by your permission, at this

point, I would like to emphasize the effect of sedatives upon these demented conditions. The patient I before alluded to as having three attacks during the gestational period of pregnancy, I was called to see two weeks before labor fully set in. I found the os dilated at least three-quarters of an inch, with apparently normal labor pains, five minutes apart. She was, I supposed, undoubtedly in labor. I ordered very large doses of chloral and bromide, about two drams of each every half hour while awake, to soften the cervix and shorten labor, which they usually do most beautifully in my hands. Having retired for rest, about six hours afterward I awoke and ran to my patient, wondering why I had not been called to deliver her, when to my surprise she slept most peacefully, with the os perfectly contracted, an effect exactly opposite to that expected, and she had been given about two drams each of bromide and chloral. After two days' rest she got up and did some of the housework for many days before labor again started to completion.

These sedatives, therefore, I look upon as indicated in threatened labor, when such a condition is due to a nervous phenomenon. It will save the child by quieting the nervous system, and thereby also close the cervix to a normal condition. On the other hand, if the gestational period is complete and labor is normal they will just as surely soften the cervix and hasten the second stage of labor, with very much less suffering to the mother.

My experience, also, is that in mental disturbances from any cause, very large doses are not only necessary to quiet the patients, but are, as a rule, exceedingly well borne by them.

TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, June 18, 1897.

The *President*, ADDISON H. FOSTER, M.D., in the Chair.

Appendicitis, with Foreign Bodies in the Appendix.

Dr. HENRY P. NEWMAN: I have here several small bird shot, and one large lead missile, dumb-bell shaped, which I found in the appendix of a patient operated upon a short time ago. The history of the case is this: The patient is a young man, twenty-six years of age, of good family, rather high liver, with no previous history of any trouble whatever. In fact, the evening before he was taken sick, he was riding his bicycle, and had ridden it daily during the week. Sunday morning he got up, went to the closet, then to his room and complained of pain in the region of the appendix. A physician was called and found that the patient had a temperature of 101°, a pulse of 108, tenderness of the abdomen with gaseous distension, and some vomiting occurred during the day. I was called in the afternoon and saw the patient between four and five. A diagnosis of appendicitis was made. By palpation through the rectum and abdomen we could map out an abscess. The patient was removed to my private sanitarium, three blocks away, and operated on at six o'clock. On opening the abdomen and making quite a deep dissection, I came upon an abscess of the appendix, which contained sero-purulent matter. The abscess was opened and the cavity drained, after which the patient did fairly well for four or five days, though drainage was unsatisfactory, and on Friday exploring the wound with my finger I came upon these small concretions. With a spoon curette I succeeded in getting out twenty of these small bird shot, and this large dumb-bell shaped bullet. It is now five weeks since the operation and the patient has gone on to complete recovery, the wound being now closed.

Some eminent surgeons have taken the position that foreign bodies such as seeds, etc., are rarely found in the appendix and never

as causative factors in appendicitis. This case would seem to show that they may play an important part in the ætiology of the affection.

DISCUSSION.

Dr. BINKLEY: You say you did not remove the appendix at the first operation?

Dr. NEWMAN: No, I simply opened the abscess and drained the cavity.

THE PRESIDENT: I did not observe that you spoke of the habits of the individual, which is an interesting point.

Dr. NEWMAN: He is a young man of good habits who lives well, and I believe birds were eaten by the family quite frequently. The patient was also in the habit of making periodical trips to Wisconsin, hunting and camping out, shooting birds, etc. It is possible that with the ravenous appetite developed by this vigorous occupation and outdoor life in eating game he paid too little attention to what he ate, and may have taken into his stomach bird shot at that time. This is a possible explanation of the manner in which the large number of these bits of lead found their way into the system.

Dr. JOHN A. LYONS: I see no reason why bird shot should not be found in the appendix of a person who frequently eats birds and ducks. I have myself frequently found bird shot in food of that kind. I would like to mention in this connection a case of appendicitis that came under my observation in a bicyclist who had ridden on a Sunday some fifty-six miles in a little over five hours. There was no one called to see him until the following Thursday, although a severe attack of appendicitis had developed, followed by a general peritonitis. The case was so far gone when I was called that I hesitated to operate; I therefore called in Dr. Ferguson, who operated on him, but the patient died. The excessive riding in this case I have no doubt brought on the peritonitis. As near as I could learn from the history given, the patient had been subject to recurrent attacks of appendicitis, hence I would recommend any one who has suffered from an attack of this disease to avoid not only bird shot but also over-indulgence in bicycle riding.

Uterus and Annexa: Ruptured Tubal Pregnancy.

Dr. LESTER E. FRANKENTHAL: The first specimen was sent to me, with the special request of the physician that I am not to men-

tion his name, inasmuch as he does not wish the relatives to know that the uterus and annexa are in his possession. He was called in about four or five minutes previous to the death of the patient and obtained this specimen on post-mortem, having made a diagnosis of internal hæmorrhage. The patient was twenty-eight years old, had been married two years, but had never been pregnant. Three or four months previous to this date, June 1, the external os was dilated for the purpose of making impregnation more likely. Her menses had ceased for two months, when, on the 1st of June, about nine o'clock in the morning, she was seized with violent abdominal pains. At eleven she sent for a physician. At one o'clock the one who gave me the specimen was called; five minutes later the patient was dead.

The specimen is a very beautiful one, for various reasons. The abdomen was filled with clots reaching up to the diaphragm, though no elevation of the bed had been made. The points of particular interest in the specimen and history are: 1. In the centre of one large clot this body was found encysted, the membranes intact still containing the fœtus. 2. She had never had a hæmorrhage. 3. She had never passed a decidua. 4. On opening the uterus we find the cervical plug still intact, and (5) the decidua can be most beautifully demonstrated *in situ*. 6. The tube on the left side is the one that ruptured, the rupture being on the posterior superior border of the tube, midway between its uterine and fimbriated extremity. 7. A corpus luteum is contained in the ovum of the same side. 8. Upon careful inspection there is a tendency, you will notice, on the part of the tube to twist (spirals). 9. The whole specimen shows the exsanguinated condition of the patient. 10. The hypertrophy of the uterus is likewise an interesting feature. 11. It is said the nearer the uterus the rupture of the tube, the more severe the hæmorrhage; this rupture is midway and still it caused the patient's death. 12. This case demonstrates the oft-disputed possibility of death from hæmorrhage and shock in extra-uterine pregnancy.

Specimens of Extra-uterine Pregnancy.

The next specimen is one of extra-uterine pregnancy, this being a tube with the cystic ovary. I happened to have three extra-uterine pregnancies in quick succession, all of them of three extra-uterine pregnancies in quick succession, all of them of

the right side, and all complicated by a cystic ovary. Possibly the cystic condition may be utilized in considering the ætiology of extra-uterine pregnancy, and possibly they were all of mechanical origin (the pregnancy).

Here is the other specimen which likewise contains a cystic ovary, and which was removed before rupture.

In a paper read before this Society about a year ago I stated that I believed it was wiser not to go in through the vagina where the pregnancy was far advanced, and where there was a possibility of previous rupture; but where the Fallopian tube was still pedunculated, and where therefore we could remove it in toto, I advised entering through the vagina.

I made a diagnosis of extra-uterine pregnancy about eight weeks ago during my service at St. Luke's Hospital, but for some reason or other I permitted myself to be persuaded that the case might be one of pelvic abscess on account of high temperature (anæmic and absorbent); consequently I went in from below, and the bright red hæmorrhage which I encountered made me feel exceedingly uncomfortable; so much so that several hours after the operation I tamponed as thoroughly as I could from below, thinking it might be necessary at any time after the operation to go in from above to check the hæmorrhage.

The other specimens are likewise of extra-uterine pregnancy. This one contains a cystic ovary. Here is another extra-uterine, and here another. I have had six cases of extra-uterine pregnancy since reading my paper.

I have here a fœtus which I brought along simply on account of the female genitals. This specimen demonstrates very nicely the spirals described by Freund, and especially is this to be seen on the left side.

This specimen is of interest because of the patient's history. I think she menstruated the last time in April, 1896. She did not menstruate in May, June or July. She spotted (?) in August. I put her to bed, thinking I could save the pregnancy, and there she remained four weeks. She again spotted (?) sometime in the following month, and on the 13th of December I was called because she was in actual labor and expelled this decidua. The decidua therefore was retained at least five or six months after the primary interruption of pregnancy, and I suppose that occurred some time during the

month of August. The patient was examined by Dr. Roler in September, and he agreed that the secundines were still retained; inasmuch as the patient neither suffered from the effects of hæmorrhage nor had any elevated temperature, she was permitted to get up and get about until she went into labor in December.

The next specimen is a uterus removed per vaginam on account of excessive hæmorrhage. It is beautiful because almost every possible variety of fibroma can be demonstrated on it, pedunculated, subserous and mucous, intramural, etc., etc.

Discussion.

Dr. Henry P. Newman: Before the meeting was called to order I noticed the first specimen that was exhibited by Dr. Frankenthal, and it is a beautiful illustration of the progressive enlargement of the uterus in extra-uterine pregnancy, inasmuch as otherwise a normal condition of affairs exists, there being no salpingitis. The extremities of the tubes are still intact, and there is no closure of the fimbriated ends. The uterus corresponds to a three months' uterine pregnancy. Nothing could better illustrate the action of the normal uterus in cases of extra-uterine gestation, and it also explains one difficulty of making a differential diagnosis in the early months, the size and contour of the uterus being the same in intra-uterine and extra-uterine pregnancy up to the second or third month. The other specimens are also of interest.

Dr. C. S. Bacon: In connection with the vaginal operation we frequently hear the assertion made that packing was resorted to to prevent hæmorrhage, and yet that is not very satisfactory. Now, in the case of extra-uterine pregnancy reported by Dr. Frankenthal, where the incision was made into the vagina, I would like to ask him if it would have been possible, by means of successive ligatures or sutures applied to the uterus, to draw down the annexa so as to apply clamps or ligatures directly to the bleeding vessels.

Dr. Frankenthal: The hæmatocele reached up as far as the umbilicus before the operation and, after emptying the hæmatocele, of its clots the hæmorrhage was so extensive I feared that pregnancy had possibly advanced more than I thought when I started to operate, and that there might be a partially adherent placenta retained, from which the hæmorrhage came, and, in reference to ligating off

the annexa, inasmuch as I did not know which side it came from, I tamponed and watched the patient in the hospital, then came back a few hours afterward to see whether I had checked all hæmorrhage. If I had not done so, considering the size of the hæmatocele, I should have preferred to open the abdomen secondarily and to have checked hæmorrhage that way. I was delinquent in one thing in this operation. It would have been an easy matter to have introduced an aspirating syringe previous to making the incision and, having found blood, to have changed my tactics and to have gone in from above.

Dr. T. J. WATKINS: The case of death by hæmorrhage from primary tubal rupture is interesting, in that it at least shows that there is danger in these cases of death. At the American Gynæcological Society last year a number of prominent surgeons made the statement that they had never known of death occurring by hæmorrhage from primary tubal rupture, notwithstanding the fact that a city physician of Philadelphia reported a large number of cases that he found on autopsy where death was due to this cause.

Relative to the incision of hæmatomas due to extra-uterine pregnancy, it does not seem to me to be of any special importance if a vaginal incision is made in cases that should be operated by the abdomen for, after the blood is removed, if there are indications for an abdominal section the abdomen can be immediately opened. The removal of blood by the vagina would facilitate rather than complicate the abdominal operation. I, therefore, do not believe that it was a mistake for Dr. Frankenthal to operate upon the case mentioned by vaginal incision.

Dr. JOHN T. BINKLEY, JR.: If I understood Dr. Frankenthal correctly, he spoke of the mechanical influence of large cystic ovaries in producing tubal pregnancy. I would like to have him state in what way.

Dr. FRANKENTHAL: Either by direct pressure or by the inflammatory condition which the cystic ovary produces.

Dr. ALBERT GOLDSPOHN: I have not much sympathy with attacking a case of extra-uterine pregnancy with such extensive extravasation, as in the first case described, through the vagina. There is not very much reason in such a procedure. Extra-uterine pregnancy is usually a sterile affair, and we can deal with it through an abdominal incision, and frequently can close the abdominal wound

without drainage. This is one reason why it is but slightly objectionable to treat it as an ordinary laparotomy, and the large extravasation certainly suggests the possibility of the operator not being able to do everything that may be indicated.

A Case of Eclampsia.

Dr. FRANKENTHAL: I should like briefly to report a case of eclampsia, the previous history of which was this: The patient had convulsions during the time of detention; at three years of age whooping cough; soon after that there developed a left femoral hernia; she wore a truss up to the seventeenth year, then the hernia was spontaneously cured. She had measles at five; a little later chicken-pox; at ten she had typhoid fever, and at thirteen pleurisy, confining her to bed for one month. She was afflicted with these diseases up to the seventeenth year, when she had a genuine attack of malaria. From then on, until the twenty-eighth year, she was occupied with work at the Hull House, and while there was taken down with diphtheria. She menstruated at sixteen regularly. Her family history is good. She was in the habit of rising once during the night for the purpose of urinating during the last four years. She complains of no headaches, no eye symptoms. The condition of the kidneys was not known previous to pregnancy. She is the wife of a physician. She was married in November and became pregnant about the middle of December. On the 10th of May there was noticed œdema of the lower extremities; the urine was examined and contained a cloud of albumen; quantity of urea was normal; casts were absent. About the twenty-first of May the œdema of the lower extremities had disappeared. There was considerable pain at this time in the back, slight nausea, no headache, no pain in the pit of stomach. On the evening of May 26, about eight o'clock, there was extreme œdema of the face and upper extremities, so that the doctor again examined the urine, and found albumen by the heat and acetic acid test. The albumen came down in such density that he could invert the tube; it was solid. At two A. M. of the same night the first convulsion occurred. Chloroform was at once given, and during the night two hypodermics of pilocarpine were given, and the patient was seen at five o'clock the next morning by Dr. W. A. Phillips. Between four and five she became unconscious, and

was in this condition when I saw her at about eleven. She was cyanotic, bleeding from the mouth where she had bitten her tongue; had had twelve convulsions up to eleven, the last ones coming every thirty minutes. There was slight œdema of both lungs. With the assistance of the husband and Dr. W. A. Phillips, as well as two nurses, the patient was anæsthetized, the pubes shaved, and I proceeded to dilate the os. I tried to dilate it first with a Goodell's dilator, then I used Barnes' dilators, but was unsuccessful. Dilatation of the os was next to impossible. Barnes' bag was used, but I broke two of them. The patient's condition was growing alarming, so I made two Dührssen incisions and dilated the rest of the lower uterine segment gradully and slowly with Barnes' bag, made version, extracted the fœtus, and expressed the placenta. The fœtus lived about an hour; in other words, after I was through with the operation the fœtus was still breathing, but expired shortly thereafter. Its age was five and a half to six months. I immediately sewed up the incisions, although I believe this is not recommended. At any rate, the only literature I remember in this country is by Dr. Clifton Edgar, of New York, and I believe he does not sew up the cervix. The patient made an uneventful recovery. She was given veratrum, after the operation; was put in between blankets and given hot air baths. Veratrum was given in twenty-minim doses, hypodermically, repeated in an hour. The pulse dropped very considerably. At first it was 130 or 140 at eleven or twelve o'clock at noon, and by the evening the pulse was between 70 and 80. There was profuse sweating. The albumen is decreasing in the urine, but still a few casts can be found. It is about nineteen days since the patient was delivered.

Discussion.

Dr. C. S. Bacon: The treatment of eclampsia is a subject upon which there is very little agreement among obstetricians, and probably there will not be until the nature of eclampsia is better understood. I suppose this case is given as proof that the immediate emptying of the uterus was the right procedure, because the outcome was good. Such a conclusion would not be justified. The question of rapid delivery is still a very important one, and not yet decided. Inasmuch as one-fourth of all cases of eclampsia occur

after labor, and so long as the attacks do not cease after delivery in from thirty to forty per cent. of all cases intra-partum, it is somewhat doubtful whether the immediate emptying of the uterus is so urgently indicated, or is a measure to be advised. It is true that the results of Professor Zweifel in Leipsic have been quite favorable toward emptying the uterus. He finds that the mortality has decreased one-half during the last four or five years since he has resorted to the method of rapid delivery. On the other hand, the results of Professor Chrobak in Vienna seem to contra-indicate rapid delivery in cases of eclampsia. It is a question in Dr. Frankenthal's case whether the good result was due to the rapid emptying of the uterus, which is certainly a dangerous procedure in many cases, or to the after-treatment, the rapid elimination by means of the skin and of the kidneys, and the medicinal treatment instituted. I would call attention in this connection to one medicinal measure which I believe is important, and that is the hypodermic injection of salt solution in the treatment of eclampsia. It has not only given good results in the cases in which it has been used, but it also seems, theoretically, to be a valuable means. It acts chiefly as an eliminant, as it certainly is, and also by diluting the poison which we have reason to believe, from the observations and experiments that have been made with blood serum, exists in the blood of eclamptics, although this point is not absolutely proven. It seems probable that the toxicity of the blood serum of eclamptics is very considerably increased, and if any means of diluting the blood serum, as well as eliminating the toxic element, is indicated, the use of salt solution by hypodermic injection is one of the most valuable means to employ. That, if taken in conjuction with venesection, hot baths, and with sufficient morphine hypodermically to control the spasms, is as a rule, a safer procedure than the rapid emptying of the uterus.

Dr. Frank Cary: I have been very much interested in hearing the report of Dr. Frankenthal's case, and personally I have always favored rapid delivery, particularly in such a case of eclampsia as he speaks of, and I remember very distinctly in a case I had with Dr. Watkins of encountering the same difficulty that he did in regard to dilatation of the cervix. Barnes' bags and every other thing proved ineffectual in dilating the cervix in that case.

While I was in Vienna last year I was astonished to see the manner in which cases of eclampsia were treated in Schauta's and

Chrobak's clinics, where every case of eclampsia that I saw was left, so to speak, to itself. They did not resort to rapid or forcible delivery in any case that I saw there, but simply gave attention to rapid elimination by the skin and kidneys, and I believe the use of salt solution. It is rather hard in these cases to stand by and do nothing, and yet the question of interference is an open one. I am not prepared to lay down any rule for guidance in these cases, but I should be governed largely by the individual case. It is nevertheless a fact that those cases in which rapid delivery is resorted to are among the most successful. Personally, in a case similar to Dr. Frankenthal's, I should follow the same method that he did.

Dr. ALEX. H. FERGUSON: As Dr. Bacon has just mentioned subcutaneous injections of saline solution in cases of eclampsia, I might draw the attention of the Society to the experiments and practical work of Barrè of Paris. He not merely makes transfusion of salt solution, but performs venesection at the same time. This is done to lessen the toxins in the blood, in septic conditions, in uræmic convulsions, in scarlatina, etc. He holds that in the elimination of poisons from the system by the kidneys, venesection stands second in importance. It is quite doubtful whether rapid evacuation of the uterus does the good *per se* in these cases, but that it is the amount of blood that is lost which does the good. As a means of eliminating poisons from the blood, venesection is important.

Dr. JOHN T. BINKLEY, JR.: I have had the misfortune to have three cases of eclampsia this year in consultation. One was with Dr. Massey, a block or so from my hospital, in which the convulsions came on after labor. The treatment consisted of the hypodermic injection of Norwood's tincture of veratrum, thirty minims, three injections being given in three hours, and half-grain doses of morphine.

Two or three months ago I was called to see another woman, by Dr. Eastlake. She had been delivered early in the morning. She had a convulsion immediately after the delivery of the child, and just as I entered she began to have another. She was a full-blooded, stout working woman, and Dr. Eastlake began at once to administer chloroform. I opened a vein in her arm, drew off a glassful of blood, and as quickly as possible gave a hypodermic injection of veratrum, thirty drops. Both of these patients recovered. I was led to do this because of the teaching I received from Dr. Reamy,

of Cincinnati, who was connected with the college in which I attended lectures. A year ago last May I attended the meeting of the American Gynæcological Society, and the consensus of opinion was in favor of tincture of veratrum viride and morphine in these cases. Dr. Reamy has a very large obstetric practice, as has Dr. Mitchell, his son-in-law. He reported very carefully a great number of cases of eclampsia to the Society, and the general opinion was that veratrum should be administered in these cases. The men who favored its administration were men of large experience, and careful thinkers. Dr. Reamy laid great stress upon the subsequent use of large doses of morphine hypodermically.

A third case which I saw terminated unfortunately about sixty days ago. Dr. E. C. Williams called me about five o'clock in the morning. In this case the family was exceedingly solicitous, as a friend had died of eclampsia; this, together with the fact that the most cordial social relations existed between the family of the patient and the attending doctor, made the doctor doubly cautious. Only a few days before the convulsion, he detected a trace of albumen in the urine. From this moment until convulsions occurred, he gave the case special consideration, and upon the appearance of the first convulsion, he called me in consultation. I responded promptly to the call with my surgical nurse and every necessary appliance for an immediate delivery of the patient. Almost immediately upon entering the house, the patient had a third convulsion. The vagina was exceedingly small, and it was necessary for me to dilate the vagina with Barnes' bags. Following the dilatation of the vagina, I used a steel dilator to make the primary dilatation of the cervical canal. This I followed with Barnes' bags, until I was enabled to slip the forceps over the head. During this entire process of dilatation, which probably consumed about thirty minutes, the patient was kept thoroughly anæsthetized. I made firm traction on the forceps for something like twenty or thirty minutes when a violent convulsion caused delivery, with extensive laceration of all the soft parts. It seemed to me as if the uterus had been torn from the vault of the vagina. Realizing the extensive repairs necessary, and care which would be required, I had the patient removed at once in the ambulance to the hospital which is but a few blocks away. After careful flushing and irrigation, the tears

were repaired. Almost immediately following the operation, the patient died in a convulsion.

If there is any gentleman here who was at the meeting of the American Gynæcological Society, he will remember the discussion on this subject, and the consensus of opinion was the free administration, thirty drops, and even one-dram doses, of tincture of veratrum, hypodermically, and repeated, followed with maximum doses of morphine, hypodermically.

Dr. LESTER E. FRANKENTHAL: I was not present at the meeting referred to of the American Gynæcological Society, but I distinctly remember their Transactions, in which it was stated that the administration of veratrum should be continued on following days, if necessary, four or five doses on subsequent days. Personally, I am afraid of morphine, for the reason that in several cases I have observed its effect upon the kidneys. In one patient, on whom I have used it repeatedly there is an absolute cessation of secretion for eighteen hours afterward. The patient of whom I spoke had eleven convulsions at the time she was seen by me; there was beginning œdema of both lungs; she was unconscious; the albumen test was solid. I do not believe that I would hesitate to rapidly deliver in these cases in view of the possibility of lacerating the soft parts. We are liable to have tears, but we are prepared to repair at once any damage that is done. On the other hand, excluding that, I cannot possibly see any dangers whatever. We proceed aseptically and antiseptically to prepare the patient just as we would for a vaginal hysterectomy, and I see no more danger in performing rapid delivery in eclampsia than in the other conditions. Had I seen this patient early I perhaps would not have delivered at once. I should have done as they do in Vienna, put her between blankets and turn on a hot air bath, and give her salines per rectum and likewise under the breast, a treatment, by the way, which this patient received after delivery. She received 6-10 of 1 per cent. salt solution in either breast, and rectal injections of salt solution. I am sure every one who would have seen the desperate condition of this patient, would have agreed in resorting to rapid delivery. Considering that she had eleven convulsions, œdema of the lungs, was unconscious, cyanosed, etc., I think every one would have done the same thing. Dr. Bacon argues that from thirty to forty per cent. of the cases have return of convulsions after labor; this is too high, for Olshausen, in

a collection of two hundred cases, shows no return of convulsions in eighty-five per cent.; not thirty to forty per cent., as Dr. Bacon states, but fifteen per cent. Likewise does Olshausen state that he has never seen a patient recover after the fifteenth convulsion.

I likewise agree with Dr. Ferguson that the hæmorrhage during delivery is of great use, inasmuch as in plethoric patients it saves venesection.

Exhibition of Unique Microscopic Sections of Papilloma and Carcinoma of the Tubes, with a Review of Cases Treated by Me at St. Luke's Hospital During One Year.

By T. J. Watkins, M.D.

(See page 238.)

Exhibition of Specimens.

Dr. Emil Ries: The first specimen I show you is a left tubal cornu from a case of adeno-carcinoma of the tubes, where there is a combination of two neoplasms, adeno-myoma and adeno-carcinoma. Under low power you will see the tubules of the adeno-myoma, as well as the carcinomatous particles.

In the field toward me you will see carcinomatous masses, and in the other direction masses of the adeno-myoma. I have here a part of the tube which shows adeno-carcinoma with a deviation of the tube, and it shows you the difference of the carcinomatous structure in the cavity of the tube and under the peritonæum. Under the peritonæum there are solid masses of carcinoma, and in the cavity you have a papillomatous condition.

I have here a specimen from a case of carcinoma of the tubes. and you will see the papillomatous structure of the neoplasm in the cavity of the tube. This is a perfectly unique specimen, because in the six cases of the literature of the subject there is not one with adeno-myoma, and here is a complication of adeno-myoma and carcinoma. The importance of adeno-myomas in the formation of malignant neoplasm in one case, and malignant papilloma in the other is great. I do not think adeno-myoma has anything to do with the formation of papilloma or papillo-carcinoma. Adeno-myomas of the tube are frequent tumors; they are by no means rare, although

the time is comparatively short since they were known. I find that adeno-myomas occur in almost twenty per cent. of all cases of tumors.

I have here one section of a tube showing thickening of the tube in consequence of adeno-myoma with papillo-carcinoma. In looking at this with the microscope you can see the cavities of the adeno-myoma in dark or blue lines, while the carcinoma shows dark or blue masses.

As to the plastic work on the tubes which Dr. Watkins did, in some recent examinations of tubes on which operations have been performed, they give some unexpected vistas into the future of tubal plastic work. It seems to be unnecessary to try to preserve as much as possible of the tube. A little stump of the tube is all that is necessary to preserve. The little stumps of the tubes, even where they have been ligated, remain open; they do not close up, leading in many cases to the formation of some exudate. In other cases particles of ovaries have been left and led to the formation of pregnancy in the uterus, where pregnancy was supposed not possible to occur, because the tubes and ovaries were said to have been removed. There are three cases on record in this country where pregnancy occurred after the removal of both tubes.

I have three cases of tubal stumps which have remained open after removal of the appendages. They are perfectly permeable from the cavity to the peritonæal end. I have published some of the cases in the *Archiv. für Gynækologie* and cases of papillo-carcinoma were published in the journal of the American Medical Association, May 22, 1897. The drawings I have made from this paper published in the journal will show the condition of the tubes better than the few microscopic specimens which I can show you to-night.

Discussion.

Dr. Lester E. Frankenthal: I am glad that an opportunity offers itself for me to publicly congratulate Dr. Watkins upon his excellent work during the last year. He is to be congratulated (1) upon his good fortune in meeting so varied pathological conditions of the female genitalia, and in two particular instances the cases are unique; (2) he is to be congratulated also upon his conservative methods. His igni-puncture of small cystic ovaries is a conserva-

tive way of treating the tube, excision of the tumor in the middle of the tube, and sparing the remainder of it; (3) he is to be congratulated upon his most excellent results.

The case of general puerperal peritonitis was referred to him by me, and I asked Dr. Watkins to operate on the woman. She was in a moribund condition when admitted to the St. Luke's Hospital, so that it is hardly fair that this case should be included in his mortality list. His mortality summary is about one and three-quarters per cent. This is a record unsurpassed by the gynæcologists in our country.

On account of the late hour, I believe I had better not discuss in detail the methods employed in the various conditions spoken of, in the paper; but I would like to recommend to the members to try ovarian extract, after removal of the ovaries, and likewise in treating the symptoms of the natural climacterium. I have had excellent results with it. The patients do not complain as severely as they do otherwise, and in only one instance did I get an erythema following the administration of it. I have used Armour & Co's. ovarian extract.

I should likewise urge the use of formalin catgut for intra-abdominal ligatures. Our results have been excellent with it. It is tougher than any catgut I have ever used. Through the painstaking efforts of our assistant superintendent of the Michael Reese Hospital Training School—Miss Tooker—we have a superior catgut. This is her method:

1. Roll tightly, single layer on one-half-inch glass rod.
2. Immerse for forty-eight hours in two per cent. or for twenty-four hours in forty per cent. solution formalin.
3. Wash for an hour, changing water frequently (3-4x).
4. Immerse in sterilized water for twenty-four hours.
5. Boil for thirty minutes.
6. Preserve in sterilized alcohol, containing two per cent. solution iodoform.
7. This catgut will not stand a repetition of the boiling; it seems to grow brittle.

Dr. Wm. H. Rumpf: I desire to add a few words of congratulation to those already spoken regarding the excellent paper of Dr. Watkins. I have enjoyed it very much. I am sorry that we do not have more résumés of work done in this manner. The only way

nowadays by which we can learn is to compare our work. We can learn a good deal from these practical results.

We are also indebted to Dr. Ries for this pathological demonstration. This is another point that we are very lax on. Our cases are not utilized; we do lots of operating, and the specimens are put in alcohol and left there. If we examined our specimens more closely we would be able to adopt better methods of treatment and do more scientific work.

The paper of Dr. Watkins covers so much of the whole field of gynæcology that one might spend hours in discussing it.

Dr. ALEX. H. FERGUSON: I wish to congratulate Dr. Watkins on his excellent paper and his good results. These results are equal to any obtained in any place, I believe. The paper covered so much ground and so many subjects, that it is practically out of question to discuss it this evening. While he was reading it there was one point that struck me, with regard to the case of vaginal section for a double suppurating ovarian tumor that died from sepsis, and a little later on he remarked that he did not flush the abdomen in a single instance. It occurred to me that flushing of the abdomen in those cases is a good thing and sometimes prevents rapid absorption of septic material after the operation, and obviates subsequent bad results. We know that in appendicitis, and the same holds true with salpingitis. We have been told by some surgeons simply to do nothing but open, mop out and drain. Before that we had a period of flushing. I have tried both very thoroughly. I think I will be able to prove that in all of those cases in which there is sepsis and where the septic matter is more or less circumscribed, as in the pelvis or in chronic cases of appendicitis, we have better results by thorough flushing at the time of operation.

Dr. HENRY P. NEWMAN: I also feel grateful to Dr. Watkins for presenting the results and details of this large amount of work. As has been stated, the work is so extensive and covers such a large field, that it is impossible to discuss it.

Dr. JOHN A. LYONS: I congratulate Dr. Watkins on his wonderful success and painstaking, careful work. I have listened with interest to his report.

Dr. WATKINS (closing the discussion): Dr. Ferguson's criticism relative to irrigation may be a good one in some instances. The case of double suppurating ovarian tumor that died might have re-

sulted differently if I had washed out the pelvis thoroughly instead of trusting to dry mopping and drainage.

Mental Disturbances following Plastic Operations, with Report of Cases.

By John A. Lyons, M.D.

(See page 267.)

Discussion.

Dr. Henry P. Newman: The subject of this paper is one that I have always felt very much interested in, and some of you will remember that I presented to the Society some years ago a paper on an allied subject. While recognizing sepsis as a causative factor in nervous and mental disturbances following operation, we should not belittle the importance in this regard of the direct mental effect and relative shock of all surgical procedure—in greater or less degree depending on the length of the operation, the quantity or duration of the anæsthetic, the amount of hæmorrhage, the extent of trauma, and not a little on the nervous susceptibility of the patient. While I regard shock as largely physical, the mental condition plays an important part. In the case of a nervous, high-strung woman, easily excited, unable to bear pain, with a great and increasing dread of anæsthesia and of operation, is it any wonder that she should be affected and should lose control of her will power, and that an explosion should take place following operation or recovery from the anæsthesia. Some writers lay great stress upon the predisposing causes, such as heredity, the state of the patient prior to or at the operation, the condition of alcoholism, contagious disease, etc. An important element which we overlook in our patients is the influence of dread and disturbed nutrition, which may come from it, as well as the prior condition of the patient, in the results of our operative procedure. I think we can do a good deal of creditable work along the line of prophylaxis in this class of cases. We should carefully guard against sepsis; not give too large a quantity of the anæsthetic and prolong the operation. The operation should be done as rapidly and as expeditiously as possible. Then, too, the

maintaining of bodily heat at the operation and subsequently is extremely important in preventing some of these untoward results.

Dr. BINKLEY: I would like to ask Dr. Lyons if he stated that two drachms each of bromide and chloral were given in the case referred to.

Dr. LYONS: As near as I can judge, that amount was given.

Dr. NEWMAN: I would suggest the use of bromides as a preventive, also the use of alcoholic stimulants.

The PRESIDENT: I have seen a similar effect upon the os, as has been described by the essayist, with restoration of the uterus, where there had been undue nervous symptoms, etc.

Dr. J. T. BINKLEY, JR.: It is hardly possible that sepsis was a factor in these cases. Dr. Dodds has also reported a good result in one of these cases at the end of eight days. He removed the silkworm gut sutures, and it is hardly probable that any sepsis entered into the cause of the insanity in his case. I have never seen any such reflex symptoms follow this class of work done by myself, or in the observation of the work of other men. Situated as I am, for the last seven years I have seen a goodly number of cases, but I have never seen any case of insanity following such surgical procedure. There is no doubt that every patient who comes to us for operation, whether man or woman, prepares himself for this ordeal with a great deal of mental worry, and the relaxation following it is undoubtedly a prominent factor in the causation of the mania in these two cases.

Dr. ALBERT GOLDSPOHN: I agree with Dr. Newman that the psychological element should certainly not be forgotten, but I believe it is the opinion of specialists in mental diseases that most of these cases are due to sepsis or to intoxication with some drug or drugs. I have only had one case of mental disturbance following a comparatively minor operation. The woman became acutely maniacal and required restraint. She recovered, however, after fully half a year. The operation was amputation of the cervix with restoration of the pelvic floor. The case was free from any suspicion of sepsis. I have a suspicion that the small amount of iodoform used may have played some rôle in the causation of the mental disturbance. It was not due to the urine. But I have seen iodoform poisoning undoubtedly when it was not found in the urine by ordinary tests.

As to the rôle of major gynæcological disease, when the uterus and appendages are involved, there the field is very great for mental disturbances following surgical interference. I think the gynæcologist would be a very useful man in charge of females in insane asylums. During the last nine months I have had two cases that I recall to mind that are somewhat interesting. One was a woman with chronic metritis with a badly torn cervix and pelvic floor, enlarged cystic ovary on one side with a thickened tube and ovary less diseased on the other, who was advised to be operated by her physician several years ago, but she yielded to her natural dread of all operations until at this time. Then she became mentally deranged to the degree of having fixed delusions, and was very badly troubled with insomnia. She frightened every one of her relatives, and at that time they were opposed to any operation that was advised. It seemed to me, from the prospects in the case, it would be better if menstruation were preserved, and therefore I pursued the conservative plan. I resorted to a vigorous curettement, followed by liquid caustic and amputation of the cervix, with the removal of the ovary and tube on one side, and resection of the ovary on the other side, which was destroying the cystic follicles, and finally repair of the pelvic floor. The immediate results were exceedingly satisfactory. Convalescence was smooth, but after she had returned home about three months she would have slight mental disturbance at the time of menstruation, and I felt now that it would have been better probably to have removed the uterus and other organs so as to do away with menstruation.

Another patient had chronic metritis, a torn cervix, marked retroversion, torn perinæum and diseased appendages, cystic ovary on one side, and less so on the other. This patient was the mother of several children. She had become so disturbed mentally that she could not sleep without a reasonable amount of hynotics. She would rave at night, had fixed delusions that certain parties were in league against her, and this form of the delusions was a perplexing thing to me in deciding what to do. I decided, however, to proceed radically, yet retain menstruation, if possible. A curettement was done, the cervix prepared, and the appendages, tube and ovary on one side removed, resection on the other side, shortening of the round ligaments within the abdomen supplemented with ventral fixation, and

finally repair of the pelvic floor, leaving one ovary to functionate. That woman has recovered *in toto.*

Dr. JOHN A. LYONS: In reply to some of the statements that have been made, in neither of my cases was there sepsis, and I hardly think there was iodoform poisoning. Last evening I delivered a woman from whom I had removed a suppurating tube and ovary about two years ago, and within twenty-four hours she took about two drams and a half each of chloral and bromide, with but little effect if any in quieting her nervous symptoms, and in the other case reported two drams was given in six hours for after-prescribing. I had gone to sleep, and had slept about six hours, and when I awoke I was, like Dr. Binkley, very much alarmed. I examined the patient immediately, saw that she was sleeping nicely, and found the os closed. I was satisfied to let her continue in this way.

Dr. HENRY P. NEWMAN: May I add a word in regard to this matter of sepsis? While I believe in it, I would call attention to the fact that many of these cases of insanity follow minor procedures. The object of my previous remarks was to draw attention to minor conditions outside of sepsis, and I would refer to a tabulation of eight cases of insanity reported by Dr. Noble following perinæorrhaphy. We can hardly assume that eight cases of insanity would follow perinæorrhaphy in the practice of so good an operator as Dr. Noble, of Philadelphia, without other cause than sepsis.

Dr. ALEX. H. FERGUSON: I was called in consultation in a case where perinæorrhaphy had been done, and the woman developed acute mania and died. The fact of it being a perinæorrhaphy strengthens the theory of septic infection because we have two septic tracts which can only be rendered comparatively clean, and in the repair which takes place there is a certain amount of sepsis. An anatomical fact strengthens the idea of direct sepsis; that is, the hæmorrhoidal and associated veins are so situated that the poison would find more direct entrance into the venous system and then to the distant organs of the body, such as the brain, meninges, etc., than when a minor operation is performed; for instance on the extremities.

Dr. C. S. BACON: In my examination of the mortality records of Chicago in cases of puerperal infection, I found some astonishing facts, namely, that the number of deaths attributed to puerperal insanity was quite large, in one year amounting to ten deaths.

Further consideration of the subject has led me to believe that those deaths which were attributed to puerperal insanity were largely of septic origin. This has a bearing on the subject under discussion, because the tract of infection is the same.

Dr. ROBERT DODDS: It seems to me, there is a point involved in the subject under discussion that has not been touched, namely, the influence of the sphincters. In the repair of the perinæum the vaginal sphincter is involved and that of the uterus in the cervix. In view of the numerous reflex symptoms that appear where a sphincter is involved it seems to me it would be well to attribute part of the mental or whole troubles reported in these cases to this source.

I have to report one case of acute mania arising from perinæal section. There was, however, infection in the case.

The PRESIDENT: The remarks of Dr. Ferguson lead me to review the cases of mania that have come under my observation in connection with the puerperium. I find that puerperal mania has occurred more frequently in those women in which there were deep lacerations of the perinæum than in the more simple cases. As far as my experience goes, I have not seen all severe lacerations followed by mania. However, whenever we have severe lacerations involving the two passages we ought to look out for puerperal mania.

Dr. LYONS (closing the discussion): I can show by the records that there was absolutely no sepsis in either one of these cases, for such would have been indicated by the thermometer and pulse, particularly by the pulse. However, my friend Dr. Ferguson might possibly have discovered some that I could not find. The case in which a perinæorrhapy was done was very annoying to me, because of the mental disturbances; yet, as far as the result of the operation was concerned, it could not be better. In fact, I have never had better results than in the case I have reported to-night. I do not believe that either of the operations, so far as union is concerned, could have been improved upon. Therefore, I cannot possibly see how they could be held responsible for the mania.

Official Transactions.

T. J. WATKINS, *Editor of Society.*

LARGE VENTRAL AND UMBILICAL HERNIÆ IN THE ADULT WITH THREE CASES OF RADICAL CURE BY AN IMPROVED TECHNIQUE.*

By Albert Goldspohn, M.D., Chicago.

Our subject excludes from consideration the great majority of the aggregate number of umbilical and ventral herniæ. We are dealing only with those cases that present a distinct difficulty in the technique of the operation for radical cure, and that have recurred with extreme frequency after such operation. Small- and medium-sized herniæ of this class in the adult offer no difficulty in operation, and no disappointment as to the permanency of results, with the best technique heretofore employed.

We will allude to the small, often unfortunately obscure epigastric, or so-called fat herniæ, merely by calling attention respectfully to the admirable treatises of Lucke (1), McCready (2), Oscar Witzel (3), Roth (4), Froehlich (5), and K. Bohland (6). The last-named author found these herniæ in one per cent. of all ambulatory (dispensary) patients. And all these authors join in the wholesome admonition to all practitioners to examine for these herniæ in all cases of gastralgia or obstinate stomach disorder. As to the embryonal and fœtal types of congenital umbilical hernia in the new-born, and the acquired umbilical hernia in infants, and their treatment, we refer with satisfaction to the able articles of O. Lindfors (7), C. Breus (8), P. Berger (9), and Cahier (10).

An old question which has been asserted, denied and reaffirmed, each by a number of good authorities, is that many of the umbilical herniæ, when closely examined, are found to be not truly umbilical, but para-umbilical; that they come through apertures in the linea alba in close proximity to the navel, most frequently above and at its sides. When this is so, it is in all probability brought about by the interposition of the umbilical fascia. This structure was mentioned first by Vidal de Cassi (11), in 1848, who divided umbilical hernia

*Thesis for the Chicago Gynæcological Society, May 21, 1897.

into direct and indirect. It was more extensively traced and described by Richet (12) in 1856. It was noticed by Robin (13), who regarded it as exceptional in the publication of his investigations of the retraction of the umbilical vessels in 1858. It was again extensively investigated by H. Sachs (14), of Dorpat, in 1887, who describes it as follows: "The umbilical fascia may be regarded as a more markedly-developed portion of the transversalis fascia, which increases the resisting capacity of the peritonæum to a variable extent at the umbilical region. It constitutes a fibrous lamella, whose fibers run transversely and are intimately united to the inner blades of the sheaths of the recti muscles to the right and left. It bridges over the linea alba and all structures that lie in contact with it. Its upper and lower borders vary greatly in their extent and conformation, being sometimes distinctly concave." It is strongest where it passes directly across the umbilical ring, without dipping into it; and the peritonæum is firmly adherent to it. It was found present in the bodies of two-thirds of all children up to ten days old that were examined, and it becomes more distinct after the first month, although changes occur with the retraction of the umbilical vessels.

As to the frequency of occurrence of umbilical hernia, the statisticians have not been so active as in many things. But Bryant (14) and M. S. Marcy (15) say they constitute five per cent. of all herniæ and are next in frequency to those of the groin. But the larger ones to which we address ourselves fortunately will compose only a smaller portion of this percentage. These occur with great relative uniformity in females of small or medium stature, who are corpulent from an excessive amount of adipose tissue and have borne children. This is so much so that we can recognize in these features (1) the predisposing and (2) the principal exciting cause of these lesions. Their abdominal walls, and often their abdominal contents, are so encumbered with fat that the abdominal muscles atrophy rather than grow in proportion to the weight of the body and the degree of intra-abdominal tension. The predisposing cause is therefore evident. But females of this construction who are nulliparæ have these herniæ no more frequently than males of a similar build. Therefore childbirth must be the principal exciting cause, which is commonly admitted. But ascites and any other condition or action that implies habitual intra-abdominal pressure, either continuously or interruptedly exercised, or a sudden strain of the ab-

dominal walls, especially when the trunk is thrown backward, may be an exciting cause of umbilical hernia.

It is not of much practical importance whether the initial changes in the arrangement of tissues, in the incipiency of paraumbilical and ventral hernia, occur through the outward progress of subserous lipomata, that insinuate themselves into crevices in the abdominal walls and draw the peritonæum after them, according to Roser; or whether, as others think, the exits for these herniæ occur in the channels where vessels pass through, whose bed has been widened by a deposit of fat, which has either given way to intra-abdominal pressure, by reason of its lesser resistance, or has been absorbed under conditions that cause emaciation, and has left openings into which the omentum may be forced from within. Both of these processes probably occur.

Wide diastasis of the abdominal recti muscles, in a generally relaxed and pendulous abdominal wall—sometimes associated with some degree of Glenard's disease—is not a rare result of frequent or rapidly repeated labors. But aside from this, the large ventral herniæ are quite uniformly the result of some trauma, or incision in the abdominal wall, that has left its individual layers imperfectly or not at all restored to their individual continuity. It is a blot on the otherwise fair records of gynæcologists chiefly, and therefore it behooves them, especially, to be active in erasing it.

The occurrence of ventral herniæ after median abdominal section, as stated by various observers, varies from five to thirty per cent., the higher rates being obtained by those who base their figures upon actual examination of each and every available case, made by themselves or other competent physicians. Dr. John Homans (16), in 1887, from a review of 242 available cases, out of a total number of 384 abdominal sections, obtained fourteen per cent. Christopher Martin (L. Tait), according to J. D. Maury (17), claims to have had only five per cent. Edebohls (18), in 1891, had 4 herniæ in 54 cases, or 7.4 per cent. In 1895, Winter, with the assistance of Semmler (a student), produced the best contribution on this subject by making a personal examination of 393 cases, and securing an examination of 129 additional cases by competent physicians, making together 522 as available, out of 1,000 abdominal sections performed by G. R. Ohlhausen and himself from 1889 to 1894.

The astonishing results were that hernia followed in 30 per cent. of the sections made in 1889, in 29 per cent. of those made in 1890, and in 23 per cent. of those made in 1891. But, when during the subsequent two and one-half years, separate and accurate union of each principal layer of tissue, more particularly of the opened aponeurosis anterior to the rectus abdomenis muscle was secured, the herniæ followed in only 8 per cent. of the cases.

As to herniæ following incisions in lateral portions of the abdomen, we learn, according to Carstens (20), that one firm alone, in 1893, made six dozen trusses to order especially for herniæ following the operation for appendicitis. And as to hernia following colotomy, Kuehne (21) reports, from Kuester's experience seventeen cases closed by en masse sutures, with herniæ following in nine cases, or 53 per cent.; while in twenty-seven cases of closure by apposition of individual layers, it occurred in only three cases, or 11 per cent.

The features about the closure of an abdominal incision and its after-treatment, that conduce to the subsequent formation of a ventral hernia, we would state as follows:

1. A portion of cyst or abscess wall or of a pedicle, sewed into any portion of the incision. These objects hinder the union of individual layers in the wound; they atrophy and retract, and leave a considerable aperture, which becomes closed only by skin united to a thin web of cicatricial new formation beneath it.

2. Voluminous capillary drains, especially when placed for septic conditions, when it cannot be removed in time to secure primary union, and a suppurating sinus ensues.

3. Closure of the incision by *en masse sutures alone*, when they catch the previously ununited margins of peritonæum, and draw them up so that they may become interposed between the inner edges of one or both recti muscles, and especially when separate and accurate apposition of the cut edges of the aponeurosis anterior to the rectus muscle—the principal bearing structure in this part of the abdominal wall—is neglected.

4. Suppuration in the wound, induced—when the operator and his materials are aseptic—by (*a*) the transit of septic elements removed from within; (*b*) by insufficient cleansing of the skin before operation; (*c*) by loose or contused tissue particles left in the wound; (*d*) by excessively heavy catgut or tendon, and its knots in the

buried tiers of the wound; (*e*) by excessive tension of the sutures; (*f*) by secondary infection from without through capillary attraction, as in silk sutures, and (*g*) by extravasations of blood between the layers, which occurs when suturing in *tiers alone* is relied upon, without any interrupted mass or tension sutures that should be placed at intervals of two to three centimeters, should embrace not over one-third inch of the skin edges, but much more of the recti muscles and their sheaths, and should pass through the peritonæal raphé, so that they will hold all the layers together.

5. Large abdominal drainage tubes, especially when left *in situ* longer than forty-eight hours.

6. Sutures of non-absorbable material having high capillary attraction, which therefore require removal earlier than the tenth or fourteenth day, which, as a rule, should not be done.

7. Insufficient suturing, intestinal distension, and all strains, as at defæcation or from an outcry, from persistent vomiting or coughing, or from interrupting the recumbent posture earlier than three weeks after operation.

8. Long and low incisions, particularly if the tendinous attachments of the recti muscles to the symphysis pubis are incised or mutilated.

9. Direct contact of intestines with the inner surface of the wound without the normal interposition of the omentum, which should never be neglected, when possible, before closing the wound.

Large umbilical and ventral herniæ are usually not reducible, and our observations agree with those of others, that the larger size of the eventration has rather rapidly developed since the time when the organs in it were no longer readily or spontaneously reducible, on account of adhesions to the sac, or vascular union with subcutaneous tissues. These develop quickly, particularly in ventral herniæ, where the peritonæum, being firmly united to the edges of the opening, is not so distensible, but ruptures early, and leaves the viscera to roam under a thin cicatricial web united to the distended skin, and forms a conoid projection. In the umbilical herniæ, likewise, the distended peritonæum forms trabeculæ between pouches of the sac in which the hernial contents are lodged and adherent, while they dissect up the adipose layer in an extensive area around the hernial opening frequently, and assume the contour of a conical mushroom. This mass rests upon a tense aponeurosis, the

linea alba, which has become from ten to fifteen or more centimeters wide, and is making a desperate effort to prevent still further separation of the recti abdominis muscles. Near the center of this web is the hernial ring, that usually has hard, sharp and calloused borders, and a transverse diameter of from six to ten centimeters. In case of a large umbilical hernia, the omentum, the transverse colon and the small intestine are the most frequent contents in the order named, and associated together or singly. But exceptionally, the acsending colon also, and vermiform appendix and part of the stomach, have also been found in it. (Schuchart.) In ventral hernia, the omentum and small intestine are the most usual contents.

These delicate and sensitive peritonæal structures, being hooked over the edges of the hernial ring, suffer impairment of their functions from flexure and compression, and make morbid traction upon their supports, which are inhabited by the solar plexus and its emissaries. In case of large umbilical protrusions, we concur with the view of K. Roser (22), (Hanau), that the omentum adherent in the sac makes traction upon the transverse colon. This in turn makes the mesocolon tense beneath the stomach like another diaphragm. The lesser peritonæal cavity and the stomach are thus crowded upon from below, while the transverse colon in turn is constricted, partly by traction on the omentum and partly by pressure against the stomach above. This play of vicious forces in these vital organs accounts, in a measure, for the pain and traction in the epigastrium, loss of appetite, dyspepsia, flatulence, constipation, melancholia and general debility that most of these patients suffer from, and it gives emphasis to the declaration of Championniére (23) that this lesion induces premature senility, albuminuria and diabetes. This author records a larger experience than any other. He has operated on eighteen of these cases, comprising many of the largest. He insists that all umbilical and ventral herniæ should be operated radically as early as possible; that when they grow to such huge proportions, they rapidly reduce the general patency of the entire abdominal walls so that operation without recurrence is no longer possible. Furthermore, Bryant declares that strangulation is relatively more frequent in umbilical than in all other herniæ—it constituting six per cent. of all cases of strangulation, and no small number of cases have ruptured spontaneously before this highly

fatal complication had appeared; three of such cases being observed by Edebohls (24).

But, notwithstanding, these marked disabilities and dangers which are depicted by Keatly (25), and emphasized by Saenger (26), surgical relief or cure has, until about ten years ago, been quite generally deferred until strangulation occurred. In 1890, Saenger's assistant, Dr. Lehmann, could not find more than twenty-seven cases of non-strangulated umbilical hernia operated upon during eleven years ending at that time, by seventeen operators, and with one death.

Strangulation in umbilical and ventral hernia, as in all others, has in all periods of surgical history, been the signal for operative interference. As exceptions to this rule are recorded Huguier (27) in 1861; also Verneuil (28) and Dr. Hodgen (29) in 1879. These authors favored leaving these disastrous strangulations to nature, because the fatality after operation was so high. As far as the records show, the old practice of waiting with surgical aid until strangulation and death are in sight, was departed from first by Burkhardt, of Stuttgart, in 1883, who operated for a large non-strangulated but irreducible umbilical hernia, which contained parts of the ascending and transverse colon with the appendix vermiformis, and a portion of the stomach and small intestine. He sewed the ring with five buried wire sutures, and the outer wall with silk, and obtained a recovery. But it seems this forward step was not adopted until 1886, when Maydl (28) took the same and another very fruitful step forward.

The rate of mortality after operation for strangulated umbilical hernia is still high. In pre-antiseptic times it was extremely so. In a collection of cases made by Uhde (29) in 1869, 57 cases out of 122 died—or 47 per cent. But in 1884, Hofmokl (30) collected 34 cases (four men and thirty women) of which 5 only died—or 15 per cent. In 1889, Kaarsberg (31) obtained a mortality of 29 per cent. in a collection of 59 strangulated cases, while 9 non-strangulated cases all recovered. And in 1890 O. Vulpius (32) states the rate of mortality in strangulated cases as 18 3-10 per cent., while of non-strangulated cases he had a collection of 76 cases (six of Czerny's) all of which recovered.

It is therefore demonstrated that radical operation for these herniæ, when not strangulated, and when undertaken before their otherwise rapid infringements of the general health and spirits of the

patient have occurred, is attended with little danger as compared with other abdominal sections, if it is done with the same care and skill. It was not for this reason that otherwise bold and successful operators so long waited until strangulation or marasmus threatened; but (1) because of the manifest difficulty in the technic of closing the wound in these cases of wide diastases of the abdominal recti, and (2) because of the painful experience of seeing very frequent and early recurrences of the herniæ after the operation.

Dr. Lehmann (Saenger) noted seven recurrences in twenty-seven cases operated upon.

Thos. H. Manley (33) in a case with a wide opening closed it with tier sutures. But during the after-treatment the central part of the wound opened and 8 inches of small intestine was extruded and occluded. As late as 1895, Langsdorf (34) had to resort to adhesion straps to assist in closing the wound. These he continued for six months, and two months later the rupture recurred while wearing a bandage. Pernice (35) could close the wound only by deep en masse sutures. Championniére declares that recurrences will come. And Gill Wylie (36) had eight operations for ventral hernia to do, on six patients, in one year. Such were some of the discouraging features about this operation even in recent years, when two important improvements in the technic were known and practiced; viz., (1) opening the sheaths of the recti and sewing in tiers, and (2) omphalectomy.

The former of these devices was formally introduced to the profession by Maydl in 1886, who opened the median edges of the sheaths of the recti muscles, and closed the wound in four tiers of sutures. With this suggestion and from that time forward the operation was more generally adopted. This technic with minor modifications was adopted by Saenger, W. G. Wylie, H. Meek (37), Edebohls, Boldt (38), Baldy (39), Le Dentu (40), Kramer (41), Ostermeyer (42), Lucas Championniére and others. The last-named author lays stress upon removing as much omentum as possible. He removed 573 grams of this in one case. He had no death in eighteen cases.

Omphalectomy, the second improvement in the technic, that is often serviceable, was instituted by Storer (43) in 1866, and performed by Keen (44) in 1886, also by Sonnenburg (45) and Taylor.

What is erringly alluded to as the method of Condamin consists

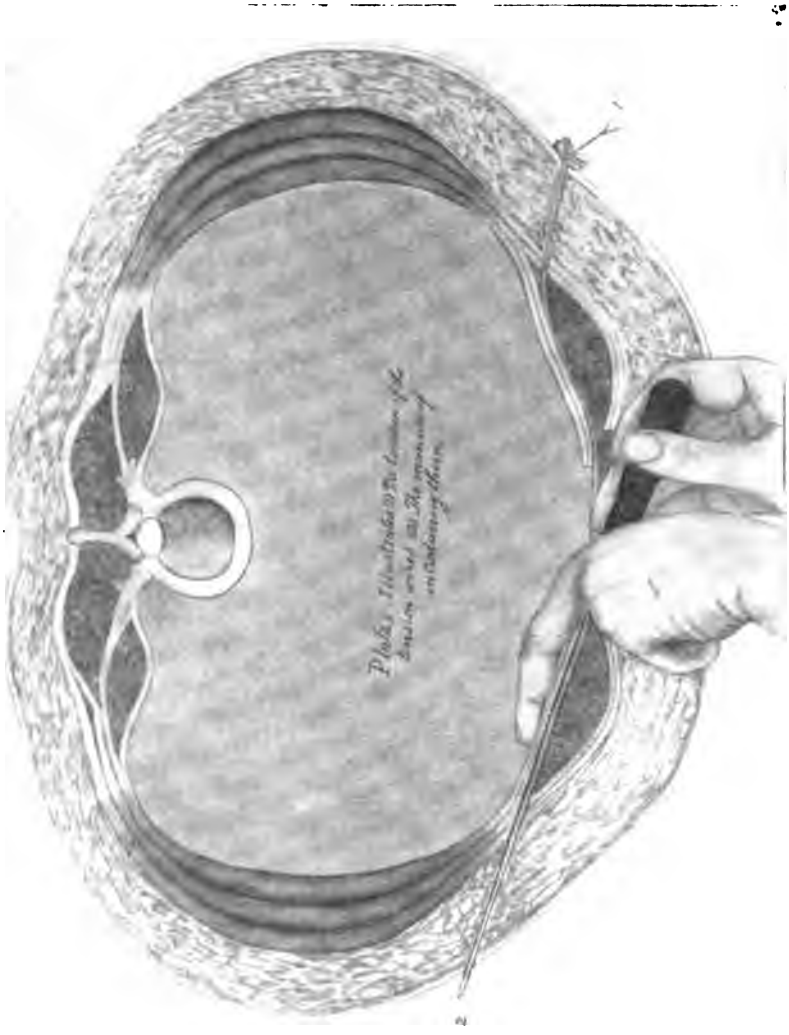
in making an ellipsoid incision in the skin and deeper structures, entering the peritonæum at a point in the periphery of the hernial ring, disengaging the contents from that point of approach, and removing the sac entire with the skin in one mass. This was done in 1891 by John D. Maury (46). Next it was published by Goullioud (47), then by Condamin (48), and subsequently by Bruns (49), Brackel (50), Bordier (51), Van Noorden (52), Boughman (53), and others. Two other plastic efforts have been devised, with the idea of obliterating the linea alba, and fixing the bodies of the recti muscles in the median line to prevent recurrence of the herniæ.

The first is that of Gersunny (54), who proceeded as follows: Closure of peritonæum and of the denuded hernial ring, either separately or together; then to open the median edge of each rectus sheath and to dissect out each rectus muscle from its sheath and from the adjoining inscriptiones tendineæ with great care, and with the ligation of a number of arteries. Then union of these two bare muscles in the median line to make one muscle in the center. The empty sheaths of the muscles and particularly their inscriptiones tendineæ are to be seized in the sutures to reinforce the muscles.

The other one of these artful efforts was proposed by Dauriac (55) in 1894 and by Wolkowicz (56) in 1896, and consists in making a cross section of the exposed inner half of each rectus muscle at the hernial aperture, then crossing these segments and uniting them endwise with sutures, so that the upper segment of one side becomes united to the lower segment of the opposite side and vice versa, so that the median halves of the muscles cross each other in front of the former hernial opening. Next the sheaths of the muscles are to be approximated as well as possible. But these practices mean altogether too much mutilation of these essential bearing structures, that have been thrown partly out of function and enfeebled by their outward recession away from the median line, which will be clear to any one who sees or performs the operation in a few of these cases with wide diastasis of the abdominal recti muscles. Any tinkering with these muscles minus their sheaths, or cross section of any part of their fibers, is a mistake. (1) Their arterial supply must nowhere be diminished. (2) They must never be taken out of their sheaths. But these must go with them back to the median line, and be retained there for several weeks by tension sutures that do not cut the muscular fibers across

by pressure atrophy, which the continued high tension would not escape. To restore these muscles entire with their sheaths, en masse, to their normal median approximation, when they have been separated 10 to 15 cm., and not impede the circulation in their median borders or the edges of the wound, by transferring the unavoidable tension from the anterior median line of the abdomen to its lateral portions, is the object that I have attempted to achieve with a kind of tension suture that is not new in the surgery of other parts of the body. A considerable portion, from one-fourth to one-third, of the aggregate bulk of omentum and intestines has lost its citizenship within the abdomen (Hoffa 59), being carried outside of the abdominal wall proper under the skin and subcutaneous structures. The muscular walls—particularly in the domain of the internal and external obliquæ—have retracted. The problem is to overcome this retraction, and to compel the general abdominal parietes to harbor an additional amount of viscera. Gill Wylie, Boldt and Marion Sims (57) have used wire tension sutures for this purpose, that were placed like ordinary interrupted sutures, only a little deeper from the edge of the wound. But it is evident that these do not remove the tension from the domain of the recti muscles and their sheaths, and do not transfer it wholly to the lateral portions of the abdomen. And they will weaken the muscles by cutting their fibers across by pressure atrophy under the extreme and long-continued tension. The silver canulæ on the ends of apposition sutures of wire, the method of Emmet, adopted by A. P. Dudley (58), accomplishes nothing of the object here aimed at.

This transferring of the tension I have succeeded in accomplishing fairly well in three cases by double wire sutures, from 20 to 30 cm. in length, which are placed transversely about 6 cm. apart, anterior to the posterior blade of the sheath of each rectus after it has been opened, and are made to extend outward on each side through the lateral margins of these sheaths and through the fat and skin. As the first act in closing one of these wide gaping wounds, from three to five of these tension sutures are passed in the following manner: While one or two fingers of the one hand are introduced into the abdominal cavity, and are held against the adjacent parietal peritonæum, a long, straight, blunt-pointed pedicle needle, having an eye that opens toward the side, is passed from one of the wound margins outward laterally between the rectus muscle and



the posterior blade of its sheath, from which it emerges at the linea semilunaris and continues outward through the fat and skin. The doubled wire is then hooked at its closed end into the eye of the long needle, and is drawn by it into the wound. The handle of the needle is then turned in the opposite direction, and its point carrying the wire is shoved through on the opposite side of the wound, between and through the same structures as on the side of beginning, the finger of the other hand here also standing on guard within the abdomen, as shown in Plate I., that the posterior blade of the rectus sheath, the transversalis fascia and peritonæum, at least, will remain unimpaired, to shield the abdominal viscera from contact with the wires. When the wire has been passed it is unhooked from the needle and its ends are twisted on each side over a button of iodoform gauze or of lead with gentle tension, after the needle has been withdrawn. When the required number of these tension sutures have been placed, they are all tightened over their buttons enough to bring the wound surfaces near each other, but not to come in contact, so that the peritonæum and posterior blade of rectus sheath can be readily sutured by a continuous catgut ligature, either alone or together, behind the wires.

The peritonæal cavity is now closed and the wound may be irrigated if desired, and then the anterior rectus fascia is united in front of the wires by a substantial catgut thread, that is prepared to hold at least two weeks. As shown in Figure II., this is made to grasp this firm fascia and part of the muscle beneath it. When this tier of sutures is completed, usually the final degree of tension is placed upon the wires, so that the catgut sutures which have been introduced are relieved of nearly all tension, and the buttons on the wires sink well into the skin. The skin and subcutaneous fat may then be sutured by interrupted silkworm gut sutures, with or without a drain beneath, resting upon the second tier of catgut sutures. But it is more advisable to have the skin open to granulate, when the layer of fat is very thick, as it is in most of these patients, or where it has been necessary to dissect up this fat layer laterally for some distance off from the widened membranous expansion of the linea alba, in order to make the receded recti and their sheaths accessible for suturing. Such flaps of fat covered only by skin are prone to become necrotic and invite suppuration. Sutures may be passed and tied temporarily over a gauze packing and drawn up,

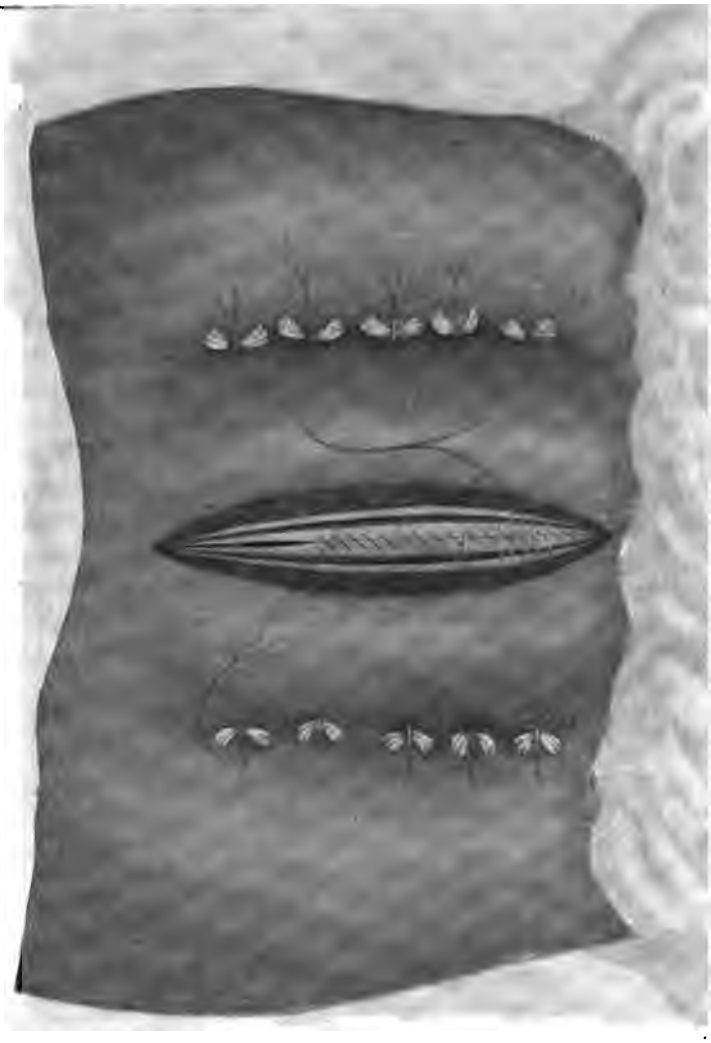


Plate II. illustrates: (1) The Wound with Surfaces brought sufficiently near each other for suturing by the First Act of Shortening the Tension Wires, by placing Tension upon them. (2) Closure of Peritonæum, Transversalis Fascia and Posterior Blades of Recti Sheaths, by a Continuous Catgut Suture Posterior to the Wires. (3) Union of the Strong Anterior Blades of the Sheaths of the Recti and a Portion of the Recti Muscles beneath, by a Continuous Suture of Strong Catgut placed Anterior to the Wires.

when this is removed, in three to five days. Complete omphalectomy, with the removal of all aponeurotic structures between the inner margins of the recti, in such a manner as to expose these muscles by the omphalectomy incision, as demanded by Condanin, is an advisable procedure only in small or medium-sized umbilical and ventral herniæ. In those of large size, now treated of, there is a general scarcity of useful tissues. Fat only abounds. It is not advisable to remove anything except skin, adipose tissue and minor triangular pieces from the upper and lower portions of the hernial ring, so as to make it perpendicularly elliptical, if necessary. The remainder of the web that spans across the wide gap between the muscles should be denuded at its edges and abraded on its outer surfaces, which should then be sutured against each other and turned inward by successive tiers of continuous catgut sutures, as Maydl did in 1886, until the inner margins of the recti are brought into apposition with the assistance of the tension wires. Then the sheaths of the recti must merely be opened and the edges of their posterior blades united by a second tier of catgut sutures behind the tension wires, while the edges of the stronger anterior blades are united in front of these wires, by sutures that grasp also a part of the muscle beneath, as before stated. The ellipsoid incision in the skin and entrance to the peritonæal cavity in the periphery of the hernial ring is advantageous, because it facilitates the examination and detachment of the hernial contents and emptying of the sac. But in cases of strangulation, the sac should be opened first, in order to wash away all hernial fluid, which, according to Brentano (*Deutsche Zeitschrift für Chirurgie*, Bd. 43, p. 288) is never aseptic after thirty-six hours of strangulation and not often after twenty-four hours.

My cases were as follows:

Case I. Mrs. W., aged forty-eight years, 5 feet 3 inches high; weight about 200 pounds. Patient generally healthy and active. Married thirty-one years. Had one child twenty-two years ago. During much habitual lifting ten years ago, first noticed an umbilical protrusion, for which she did nothing, but in recent years has worn a cloth bandage, when it gave her discomfort. During the past year it has become rapidly larger, more painful, and would no longer disappear during recumbent posture. Complains of capricious appetite, dyspepsia, constipation, flatulence, with colic attacks.

Internal organs in general healthy. Is uncomfortable from obesity. In erect posture the median vertical outline of the abdomen is that of a low cone with a pendulous blunt apex at the navel pointing forward. There is no fluctuation nor distinct tympany in the protrusion, which measures 55 cm. in circumference upon the adipose layer at its base. Evident hernial contents can be palpated and moved from side to side, but not reduced. Operation October 9, 1891, after four days of preparatory treatment to clean the skin and empty the intestinal canal. The protrusion was circumscribed by two concave incisions, meeting each other at acute angles above and below, which were 29 cm. apart. The peritonæum was first entered on the left side, near the edge of the hernial opening. The viscera passing into the latter were examined with a finger, the sac then opened from this insicion and dissected off from its contents, which were chiefly omentum, a loop of transverse colon and some small intestine, and lay spread out like a conical cake over and around the opening or ring. The latter measured 9 cm. transversely and had a thin, hard and smooth edge. After removal of a handful of omentum, the sac was cut away by the incision with scissors that freshened the sides of the ring, and took out triangular pieces from above and below, to facilitate approximation. The adipose layer on the sides was next raised sufficiently to expose the inner edge of the sheaths of the recti muscles, and these were simply laid open. Then, with one or more fingers continually inside of the abdomen to guide the needle, five long double wire tension sutures were placed exactly posterior to the muscles, so as to leave their posterior aponeuroses, the transversalis fascia and the peritonæum to guard the viscera from contact with the wires. The latter were then tightened over gauze buttons at the ends on each side until the wound edges were only about 3 cm. apart; then the layers posterior to the wires were closed by a row of interrupted fine silk sutures, and the wound then washed out. Finally, silk sutures were passed through the skin and fat 1 cm. from the edge and down through a thicker portion of each rectus and its anterior aponeurosis, at intervals of 2 cm. These interrupted sutures were tied, after the tension wires had received their final shortening, so as to bring the wound edges almost in contact with each other. A short gauze drain at the upper and lower angle of the wound, coaptation sutures, and a voluminous dressing completed the operation. An afebrile course and

primary union followed, but after two weeks the gauze buttons of the lowest tension wire became infected and cut into the skin and fat badly, and the tract of this wire suppurated, so that this wire had to be removed on the seventeenth day. The other four double tension wires remained in place four weeks. The patient was rather refractory, and neglected to wear any support for the first six months. After that time she did. I examined her recently. There is no protrusion anywhere in the line of the former incision, but a weak spot, the size of a hickory nut, at the place where the left lower (infected) gauze button cut into the tissues. But the abdominal walls, in general, appear overtaxed and relaxed. She feels better with an elastic support, which she wears regularly.

Case II. Mrs. K., aged thirty-five years; size, 5 feet 10 inches; weight, about 160 pounds; of rugged frame and muscles well developed. Married ten years; had one child eight years ago. No sickness aside from two attacks of extrauterine pregnancy, three and two years ago, respectively. The first of these she recovered from with no other assistance than a strictly-enforced recumbency of seven weeks. The second attack gave rise to extreme internal hæmorrhage in one seizure while in bed at night. Patient was extremely exsanguinated and nearly pulseless next morning. A necessarily hurried and successful abdominal section followed in her humble cottage, during which the operator, whom I assisted, made a cross section of a part of the right rectus abdominal muscle to facilitate his work. The severed portion of this muscle was united again by two silk sutures, and the main incision closed well by en masse sutures of silk. A glass drainage tube was removed in twenty-four hours. After an infusion of artificial serum into a vein, an ideally normal recovery ensued, with primary union throughout. But in one year afterward the cicatrix of the lower half of the wound had expanded, and to the right of the median line a protrusion had formed, in shape and size like half a hen's egg. Abdominal supporter was ordered. But now, twelve months later, it measures 38 cm. around its base, 25 cm. over its vertex, when in erect posture. When lying down it mostly recedes, and a part of the projecting skin pouch is drawn slightly into a large hernia opening beneath. But the contents are not wholly reducible. Patient complains of constant local pain when not recumbent, and of constipation and variable flatulency.

April 8, 1893. Radical operation in hospital. The various steps and general technic was the same as in the former case, except that only four tension wires were used, and the upper and lower ones were placed diagonally and made to cross each other near the center, because of a defect in the right rectus muscle. The ring was nearly circular and measured 7 cm. in diameter. The contents were mostly small intestine with some omentum, all of which was reduced after dissecting them off from the sac. No drainage. Recovery very smooth and complete primary union. Three tension wires were removed after four weeks, when she had gone home. Examination recently (after four years nearly) reveals no protrusion nor decided membranous spots anywhere, although some places are less resistant than others. Has not worn any bandage or supporter for about one and a half years. She complains of some uncomfortable sensations, sometimes a pain, locally, that are probably due to visceral adhesions, but does all her housework and washing.

Case III. Mrs. K., aged fifty-six years; one child, seventeen years old; height, 5 feet 4 inches; weight, 200 pounds. Generally healthy, but moves with difficulty. Has varicose ulcer of leg about eight years and suffers from general obesity. Three years ago we did a posterior kolporrhaphy and perinæorrhaphy upon her, for laceration with prolapsus uteri of second degree. No recurrence of this. About ten years ago, during severe and protracted coughing, she felt pain and a protrusion the size of a hazelnut at the navel. This she says, has remained so until one year ago. But during this time it has grown very rapidly, but caused her pain, she says, only while stooping. Constipation and slight colic attacks have abounded, and during the last two months a dark spot on the vertex of the protrusion has appeared, and is covered partly with small shiny scales or scabs. This induced her to ask for aid. While lying on her back, we find a large, rather flat and lobulated mass protruding at the umbilicus. It does not fluctuate, presents indistinct resonance, can be shoved from side to side without much pain, but cannot be reduced into the hernial opening that is barely palpable. Its wide base measures 49 cm. in circumference, while over its vertex it measures only 23 cm. Its borders are covered over by the very thick layer of surrounding adipose tissue.

Operation January 18, 1897. The incisions and entrance into the abdominal cavity were made and three tension wires placed in

the same manner as in the previous cases. The contents were composed of 49 cm. of small intestine solely, that was distributed in a number of pouches in the hernial sac. It and its mesentery were adherent in most of these, and to some of the septa so firmly that it was necessary to peel off the inner layers of the sac in order to disengage them.

After placing the first tension upon the wires and approximating the edges of the wound, the aponeurotic structures posterior to the wires were united by a fine continuous catgut suture. Next the wound was irrigated with Tavel's solution. Then the opened aponeuroses anterior to the recti were united in front of the wires by a continuous suture of heavy catgut, that embraced a part of the muscular fibers beneath also. The final tension was now placed upon the wires. The flaps of fat under the skin, which had to be raised for several centimeters on both sides in order to make the inner edges of the recti sheaths accessible, were united over a gauze drain with silkworm gut interrupted sutures. This last suturing had better not have been done so snugly, for it led to superficial suppuration in the wound after fourteen days, by fat necrosis in the bared flaps that were from 5 to 6 cm. thick. In the presence of this discharge the gauze buttons cut into the tissues more rapidly, so that the tension wires had to be removed on the twentieth day. But the deeper essential bearing structures of the wound healed by first intention, as could be clearly seen from the superficial wound, which was opened to heal by granulation and has prolonged the after-treatment, though it is now nearly closed.

This patient never had a rise of temperature above 101° on second day, nor acceleration of pulse over 110. For final results, this case is not available until several years have elapsed.

CONCLUSIONS.

1. Ventral herniæ being chiefly a sequel of some form of abdominal section, are largely preventable: (*a*) by the avoidance of those conditions which lead to suppuration, either primarily by infection, or secondarily from the presence of necrotic tissues, or by impairing the normal circulation; (*b*) by as complete and accurate a restoration of the individual continuity of all the strata, that were severed by the incision, as is possible; (*c*) by avoiding the intervention of foreign bodies—as capillary or tubular drains—or of pedicles, etc., be-

tween the surfaces of the wound for a longer time than forty-eight hours, when possible.

2. All umbilical and ventral herniæ, in persons whose health otherwise does not positively forbid the taking of the required surgical risk, should be radically cured early, by operation, before they impair the general patency of the abdominal walls by their larger proportions. This indication becomes imperative when their contents are no longer spontaneously or otherwise readily reducible.

3. The principal features in operating for the radical cure of large umbilical and ventral herniæ are: (*a*) restoration of the recti abdominis muscles, with their sheaths unitedly and entire, to their normal approximation, and retention of them there for at least two weeks by long tension sutures—preferably of wire—that pass beyond their lateral confines, transfer all tension to parts that lie laterally from the lineæ semilunares, and are so placed that they do not cut any muscular or aponeurotic fibers, nor endanger abdominal viscera; (*b*) all mutilating plastic procedures that cut off or interfere with the normal circulation, or endanger the continuity or normal contiguity of muscular and aponeurotic structures should be avoided.

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